1044b UIC - EAST POPLAR OIL FIELD ENFORCEMENT CASE SDWA 1431 Folder ID: 13659 1959 Privileged

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PRODUCTION DEFT. FILE CUPY

MURPHY CURPORATION

EAST POPLAR UNIT WELL NO. 15

Roosevelt County, Montana

Heneral File Copy

MUTIPHI CORPORATION

EAST POPLAR UNIT WELL NO. 15

C NW NW Section 11, Township 28N, Range 51E Roosevelt County, Montena

Elevation 2116* RKB

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MURPHY CORFORATION

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LCCATION:

U MW NW Section 11, Town my 28 Horth, Range 51 East,

Roosevelt County, Montage.

ELEVATION:

2104' Ground; 2115' MEB.

SPUDDED:

January 1, 1953.

COMPLETED:

February 18, 1953.

TOTAL DEPTH:

5815' Driller equals 5817' Schlumberger.

HISTORY

January 1: Spudded at 6:00 A.M. Drilled $12\frac{1}{4}$ hole from 0° to 970°.

January 2: Ran Schlumberger E.S. Set 949.32° of 9 5/8" 0.D. 36#, J-55 8 thd. casing at 962.32°, landed 13° below rotary bushing. Two HO/CO centralizers at 879.04° and 664.38°. Cemented with 400 sacks of Dakota cement. Clear cement circulated to surface. Bumped plug with 1400#; released pressure,

plug held okay. Plug down at 5:07 P.M.

January 3: Waiting on coment.

January 4: Went in hole with 8 3/4" jet rock bit and drilled 210° of sand that had settled in the pipe. Tested pipe with 1025# pressure for 30 minutes, held okay. Started drilling plug

at 10:00 P.M. Drilled plug and drilled to 1117'.

January 5-12: Drilled from 1117' to 373h' with 8 3/h" jet bit. Strapped pipe and corrected depth. 373h = 3725 SIM.

January 12-19: Drilled from 373h to 4h6h with 8 3/hm jet bit.

January 19-23: Rig repairs; replacing shaft in draw-works.

January 23-27: Drilled from 4464 to 4911. Circulated samples at 4885 and at 4911. Went in hole with core barrel and started cutting Core No. 1 at 4911. with 7 7/8" Christianson Diamond Core

January 27: Finished cutting and pulled Core No. 1, 4911 to 4918, re-

covered 4 feet. Went in hole with 8 3/4" bit and reamed rat hole. Drilled 4 feet from 4918 to 4922. Ran Schlum-

berger E.S. to total depth.

January 28: Conditioned hole and started in hole with test tool.

January 29: Couldn't get to bottom with test tool. Pulled tool and went in hole with bit. Drilled from 4922 to 4935. Went in hole

with test tool; pulled test tool after mis-run.

January 30: Conditioned hold and the Fold's Not Took to Went in hole with bit and drilled from 1955 to 1975.

January 30-

February 4: Drilled from 4975 to 5480 with 8 3/4" jet bit.

Pebruary 4: Cut and pulled Core No. 2 from 5480 to 5500; recovered 20 feet; started cutting Core No. 3 at 5500 feet.

February 5: Finished cutting and pulled Core No. 3, 5500 to 5512, and recovered 12 feet. Cut and pulled Core No. 4 from 5512 to 5520 feet, recovered 8 feet. Attempted to run Drill Stem Test No. 2, but had mis-run.

February 6: Ren Drill Stem Test No. 2. Drilled from 5520 to 5560 feet.

February 7: Drilled from 5560 to 5624 and started cutting Core No. 5 at 5624 feet.

Feburary 8: Cut and pulled Core No. 5 from 5624 to 5660, recovered 36 feet. Drilled from 5560 to 5702 feet.

February 9: Drilled from 5702 to 5780 feet.

Feburary 10: Cut and pulled Core No. 6 from 5780 to 5815, recovered 35 feet. Ran Schlumberger E.S. and Microlog.

February 11: Layed down drill pipe; ran 175 joints (5788.40°) of 5 1/2° 15.50, J-55, American casing. Landed 11.60° below rotary bushing. Float shoe at 5800°; float at 5761.87°; centralite zers at 4885, 5514, 56108 5702, 5784; scratchers at 4888-4893, 4895.40-4900, 4902-5007, 5505-5510, 5520-5530, 5624-5634, 5646-5651, 5665-5680, 5775-5780, 5788-5798. Cemented with 250 sacks of regular Dakota bulk cement with 25 gel. Bumped plug 1075#; pipe rotated freely; plug down at 9:40 P.M.

February 12-14: Waiting on cement.

February 14: Tested casing with 1000# pressure. Drilled cement plug from 5759 to 5817 feet.

February 15-18: Well undergoing completion operations as set forth under "completion data".

February 18: Rig released at 6:00 Folio

WELL HISTORY SUPPLEMENT To Treat Permation For Scale and Corresion

10-13-71 PDNO 49921

Acidized Heath Sand perforations 4891' to 98' with 110 gallons of 25% ACE and 110 gallons Tratolite WF 45 Scale and Corresion Inhibitor as follows.

Pressured tubing to 500 PSI with flowling valve closed. Injected 110 gallons of 28% HOL (with Non-Emulsifier and Inhibitor added), down annulus, followed by 110 galons WF 45 mixed with 20 bbls. Formation fluid. Displaced acid and chemical with 103 bbls. formation fluid. Caught pressure with 67 bbls. in.

Max. Injection Pressure 1200 PSI
Max. Injection Rate 1-1/2 BPM
5 Min. S.I. Pressure 900 PSI
2 Hr. S.I. Pressure 50 PSI

Note: Tubing pressure decreased from 600 PSI to 50 PSE while injacting fluid down annulus due to temperature of fluid being pumped. Tubing pressure increased to 1200 PSI and remained the same while displacing.

Well History Supplement To Acidize and Treat Formation For Scale and Corrosion

3-13-72 PETD 4992'

Acidized the Heath Sand formation 4891-4893; with 500 gallons 15% acid (with inhibitor and non-emulsifier) plus 110 gallons 990 and 165 gallons 957 VISCO corresion and scale inhibitor down the annulus as follows.

Pressured tubing to 600 PSI with down hole pump. Injected 110 gallons 990 VISCO (corrosion inhibitor) mixed with 10 bbls. Heath crude down annulus followed by 77 bbls. salt water.

Injected 500 gallons 15% acid down annulus followed by 165 gallons 957 (scale inhibitor) mixed with 110 bbls. salt water. Displaced treated water with 127 bbls. formation fluid (77 bbls. casing volume plus 50 bbls. over displacement). Shut in 24 hrs.

Max. Inj. Pressure Max. Inj. Rate 15 Min. S.I. 2 Hr. S.I.	•	1400 PSI 1-½ BPM 1150 PSI 200 PSI Casing on Vacuum
20 Hr. S.I.		Casing on vacadar

Mote: Caught pressure with 77 bbls, in tubing. Pressure decreased to 50 PSI while filling annulus, due to temperature of fluid being pumped. Tubing pressure increased to 1400 PSI and remained the same while displacing.

Well potentialed at 266 BFFD 13 BOPD 253 BUPD 95% W.C. 4-9-72

SUPPLEMENT TO WELL HISTORY

- 1-07-85 Pull out of hole with rods. Try to release tubing anchor, couldn't release it. Shut down waiting on Dia-Log.
- 1-08-85 Rig up Dia-Log. Set off rattle shot in anchor. Work anchor free, worked up hole 8'. Anchor stuck, twisted tubing off at 3792'. Pulled out of hole. Pick up 2 7/8" fighing tool and grapple. Trip in hole, catch fish, run Dia-Log rattle shot to back off tubing at 4491'. Backed off tubing 720'. Pulled out of hole, checked threads on tubing. Trip in hole, anchor fell down hole, couldn't tag it. Shut down waiting on tubing.
- 1-09-85 Tag tubing at 4150' screw into tubing, pull loose, start out of hole, anchor hung up at 4523', called Dia-Log. Ran Dia-Log chemical cutter, couldn't get below 3792' bad spot in tubing. Tried to torque tubing to back off tubing. Fishing tool released. Pulled out of hole with grapple shot. Shut down for darkness.
- 1-10-85 Trip in hole to catch fish, caught fish. Rig up Dia-Log. Try to back off tubing at 4452', wouldn't back off. Rigged up another shot, backed tubing off at 4452'. Pulled out of hole. Shut down waiting on drill collars and jars.
- 1-11-85 Pick up over-shot jars and 6 drill collars. Trip in hole catch fish. Jarred on anchor until it came loose. Pulled out of hole. Shut down for darkness.
- 1-12-85 Lay down drill collars and tools. Hydro-test tubing to 6000#. Shut down for darkness.
- 1-13-85 Trip in hole with pump and rods. Hang well on. Rig down.

Note: Three-quarters of the old anchor cage, 3 slips and 2 friction springs were left in the hole.

SUPPLEMENT TO WELL HISTORY

- 3-26-92 Rig up pulling unit. Pull rods and pump. Tubing stuck at anchor. Shut down.
- 3-27-92 Start rig. Rig up Dia-Log run in hole to 4871'.
 Tubing stuck pull up to 4866'. Set string shot
 still stuck. Run jet cutter. Cut off at 4829.16'.
 Pull tubing pick up drill collars. Shut down.
- 3-28-92 Start rig and rig up tools. Run drill collars, fish tubing collars at 4829.16'. Jar on anchor 5 hours. Anchor still stuck. Rig broke down.
- 3-30-92 Worked on rig. Released fishing tool and pull tubing. Shut down.
- 3-31-92 Start rig, pick up washover pipe and shoe and drill collars. Run tubing to 4829.16. Start drilling. Drill to 4832'. Drilled hard. Stop. Pull tubing and tools. Shut down. (Act like casing collapsed).
- 4-01-92 Start rig, lay down tools, run pumping string. Start well pumping. Rig down.

SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

East Poplar Unit D Battery and Wells EPU Nos. 6, 9, 11, & 15

The East Poplar Unit D Battery and the wells producing into the battery, EPU Nos. 6, 9, 11, and 15, are onshore production facilities located in Roosevelt County, Montana, in the East Poplar Unit Oil Field. The field is about 6 miles Northeast of Poplar, Montana, in Townships 28 and 29 North and Ranges 50 and 51 East.

The operator of the East Poplar Unit D Lease is Murphy Oil Corporation located at P. O. Box 547, Poplar, Montana 59255. The corporate headquarters are at 200 Jefferson Avenue, El Dorado, Arkansas, 71730.

The battery consists of a 6' x 27' vertical separator, a circulating pump with appropriate lines, and two 1,000 barrel galvanized bolted tanks. The tanks are vented to the atmosphere and have unrestricted 4" overflow lines between tanks. An earthen pit of about 8,000 barrels capacity is located at the tank battery into which the separator or tanks may be emptied if needed for fluid storage.

The EPU No. 6 is a flowing well. The EPU Nos. 9,11, & 15 are pumped with a rod pump. There are 4' x 4' x 2' cellars at each wellhead with overflow lines to earthen pits capable of holding a full days fluid production in case of a leak at the well site.

The field flow lines and the well casing of each well are cathodically protected. The equipment is in excellent operating condition and there is no reasonable likelihood of a discharge or spill event.

The facilities are about 2.2 miles from Poplar River. The terrain dips gently West. The soil is sandy and the fields are under cultivation. Because of the distance to the river, the type of soil, and the terrain the 8,000 barrel pit at the tank battery and the well cellars and overflow pits are sufficient secondary containment for these facilities.

SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN East Poplar Unit D Battery and Wells EPU Nos. 6, 9, 11, & 15

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The foreman, Mr. Gerald Hagadone, is responsible for oil spill prevention at this facility. On each trip to thelease the pumper makes a visual inspection of all facilities and reports any malfunction to the foreman, Mr. Gerald Hagadone, and notes this malfunction on the ten day gauge report. There has been no reportable oil Spill Event during the twelve months prior to January 10, 1974.

The equipment is in excellent operating condition and there is no reasonable likelihood of a discharge or spill event.

The field flow lines and well casing of each well are cathodically protected.

Personnel are properly instructed in the operation and maintenance of equipment to prevent oil discharges, and applicable pollution control laws, rules and regulations. Each employee is given these instructions by the field foreman when they are employed. Scheduled prevention briefings for the operating personnel are conducted frequently enough to assure adequate understanding of the SPCC Plan. The procedures are reviewed every six months by the field foreman with each employee. When changes occur in procedures, each employee is informed.

Fluid in the 8,000 barrel storage pit is pumped to the salt water disposal unit if the water is brackish as determined by chloride tests. If only fresh water is contained in the pit it is disposed of by placing on lease roads to control dust and compact the roads. Any oil in the pit is pumped back through the separator with the water being sent to the disposal well. Oil skims are burned by state permits. There are no outlets from the storage pit and all fluids must be pumped out.

The two 1,000 barrel tanks are galvanized and are bolted construction. The tanks are vented to the atmosphere and have unrestricted 4" overflow lines between tanks.

The EPU No. 6 is a flowing well. The EPU Nos. 9, 11, & 15 are pumped with a rod pump. There are 4' x 4' x 2' cellars at each of the pumping wellheads with overflow lines to earthen pits capable of holding a full days production in case of alleak at the well site.

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The tanks are observed daily by the pumper. Periodically, the foreman checks the entire tank battery and producing wells closely. If any trouble is suspected, the facility is shut down, the tanks and/or separator are emptied and cleaned. The facility is then thoroughly inspected by service company personnel, repairs are made if needed and the unit is placed back into service.

Produced salt water is pumped to a field gathering system for injection into a salt water disposal well. The above ground facilities are observed daily by the pumper and inspected by the foreman closely on his visits to the lease.

All salt water disposal flowlines are cement asbestos lines. These lines are buried and the surface is observed daily by the pumper.

MANAGEMENT APPROVAL

This SPCC Plan will be implemented as herein described.

Signature	 	 		 -
			•	
Name	 <u>, , , , , , , , , , , , , , , , , , , </u>	 		
Title		 		

CERTIFICATION

I hereby certify that I have examined the facility, and being familiar with the provisions of 40 CFR, Part 112, attest that this SPCC Plan has been prepared in accordance with good engineering practices.

•			
	Printed Name	Of Registe	red Professional Enginee
(Seal)	Signature Of	Registered	Professional Engineer
Date	Registration		State

Contingency Plans For An Oil Discharge East Poplar Unit D Battery and Wells EPU Nos. 6, 9, 11, & 15

The field is visited twice daily by the pumper. Visual inspection is made on each facility on each visit to determine if any malfunction is occurring. The most likely potential oil discharges are checked thoroughly. Periodically, the field foreman, Mr. Gerald Hagadone, will conduct a close check of the entire facility.

The pumpers, Mr. Ferdinand Charette and Mr. Robert Atkinson, have been instructed in the operations and maintenance of equipment to prevent oil and water discharges and informed of the applicable pollution control laws, rules and regulations. If an oil discharge occurs, the pumper will immediately close the proper valves and/or shut down the production facility to stop the discharge. He will then call Mr. Gerald Hagadone who will in turn inform Mr. Bill Brown, District Superintendent. If needed, the proper state and federal agencies will be notified by Mr. Brown. The discharged oil will be reclaimed or disposed of by approved engineering procedures and in accordance to law.

In the event discharged oil collects on standing water such as a stock pond or rain water standing in a low spot, the oil will be pumped into a tank truck. The skim of oil left on the water will be removed by an oil skimmer owned by Murphy Oil Corporation. The skimmer can be towed to the field within an hours time.

If the discharge is in excess of 50 barrels of oil, the Montana Department of Health and Environmental Sciences in Helena will be notified by Mr. Brown.

If a Spill Event occurs as defined by federal law, the Environmental Protection Agency in Denver, Colorado will be notified by Mr. Brown.

Telephone numbers and personnel to be notified in case of an oil discharge are as follows:

Phone Numbers as listed on other copies will be included on final copy.

Poor Quality Source Document

The following document images have been scanned from the best available source copy.

To view the actual hard copy, contact the Region VIII Records Center at (303) 312-6473.

To:	District Engineer, U.S. Gackogical Survey
From:	District Superintendent, Murphy 011 Corporation, Poplar, Montana 59255
Subjec	z: Palintias Report
Spill	Time or Accident Brown Brown Accident Broples for
1. <u>s</u>	pecit/c Nature or Cause of Incident
	Flowling leak on Rest Poplar Unit No. 15 flowline

10.00	
J. 1.	greefing FA Lacident
.13	50 yards from Rest Poplar Unit No. 15 wallhead
VI-	
	4.
3. <u>D</u> @	estriptics of Resultant Damage and Volume of Pollutant Discharged
	9 berrels total fluid - 1 barrel oil and 8 berrels water
-	
***	Minor demaga to winter wheat field.
۷, ي	end time of Occurrence
, اعبد	3/20/76 Discovered leak at approximately 9:00 A.M.
5. <u>1</u>	sugth of Time Required to Control Pacifiant or Contain Pallyments
	4 Hours required to repair leak
6	letico Vakos to Pravost Recurração
~~	Repaired the leak
•	
7. <u>Ma</u>	easures Takem to Clean Up Pollutants
<u></u> _1	Picked up all fluid possible.
	·
	no make or manufacturer, sixe, working and test pressures, date of installation
	me of new, physical damage, etc., of any equipment causing or directly involved the isoldent.
	M/A
9, O	ther Fadaral or Share Agendies Notified of Incident
	Montana Oil and Gas Commission, Billings, Montana by copy of this form.
_	
Signat	ture Breen melear Date March 20, 1976
Title	Dietr': L Superintendent

A.F.E. No. 1-1500-10

AUTHORITY FOR EXPENDITURE MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 15 NW Section 11, T28N, R51E, Roosevelt Councy, Montana (Workover No. 3)

HISTORY: This well completed in the Heath Zone June, 1969. Well was Frac with 4000# sand and 4000# of glass beads, but sanded out with 4000# of sand and 2000# beads out in formation. Put well to pumping with a potential of 346 BFPD 14% BS&W 298 BOPD and 48 BWPD. March, 1971 test 56 BFPD 88% BS&W 7 BOPD 49 BWPD (uneconomical). Accumulated production as of March 1, 1971 is 21,924 BO and 24,762 BW.

PROPOSAL: Acidize with 500 gallons 15% HCL with 110 gallons of Treatolite WF-23 (combination scale and corrosion inhibitor) added and overflushed with 100 bbls. of formation fluid.

<u>INSTIFICATION</u>: This well has been pulled five (5) times in the past year for tubing leak or pump problem (1 time for tubing - 4 times for pump). On each job the pump was filled with gyp or the pump bbl. corroded into. Pump expenses for the past year have been \$650. The above proposal should last for a period of 3 months and any future inhibator squeezes would be able to be done at approximately 1/3 this cost (if pressures are low enough) by doing job down the annulus. Production should increase by 25 to 100 BOPD if perforations are gyped up as is indicated. Decline curves for EPU 7 and 15 are enclosed for comparrison.

ESTIMATED COST Pulling 15 Hrs. at \$37.00 per hr. `550 Acid and Pump Truck 625 S Treatolite WF-23 275 Packer Rental 400 Misc. Labor, Material and Trucking 150 Total Estimated Cost \$ 2,000 APPORTIONMENT OF TOTAL ESTIMATED COST Murphy Oil Corporation 31.448470% 629 Munoco Company 2.096565% 42 Placid Oil Company 33.545935% 671 Humble Oil and Refining Company 16.335860% 327 Phillips Petroleum Company 16.335860% 327 C. F. Lundgren 2382107 4 APPROVAL OF EXPENDITURE Requested By: Approved By: M. T. James Date Ira Johnson Date

W. J. Thornton

Date

13B-MFJ/sb March 29, 1971 ----

MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 15 NW NW Section 11, T28N, R51E, Roosevelt County, Montana (Workover No. 5)

Proposal and Justification: It is proposed to squeeze the Heath formation and reopen the B-1 & 2 Zones and pump test.

East Poplar Unit No. 15 is pumping from the Heath formation at the rate of 238 BFPD 5 BOPD 233 BWPD 98% BS&W (May, 1972 test) which is uneconomical. The pumping fluid level shows 200' of fluid over the pump. A Wasp bridge plug and I sack of cement was set at 4992' leaving the B-l & 2 perforations open. The last B-Zone test was May, 1969 showing 319 BFPD 19 BOPD 300 BWPD 94% BS&W. Three acid jobs and inhibitor squeezes (scale and corrosion) have been tried on the Heath to increase production with the last two failing. The A Zone is a potential pay in the event the B-l & 2 fail to prove economical. B-Zone production should be as good as the last test shows or 20 BOPD. Payout at 20 BOPD would be 261 days using \$1.36 per bbl. net.

ESTIMATED COST

	· -	
Pulling Unit, 70 hrs. at \$40/hr. Packer and Manifold Rental Cement and Services Drilling Equipment Rental 500 Gallon Acid Job, if needed Misc. Labor, Material and Supervision TOTAL ESTIMATED COST	\$ 2,800 \$ 1,000 \$ 1,500 \$ 750 \$ 500 \$ 7,050	
APPORTIO	NMENT OF TOTAL ESTIMATED	COST
Murphy Oil Corporation Placid Oil Company Humble Oil and Refining Company Phillips Petroleum Company Munoco Company	31.448470% 33.545035% 16.335860% 16.335860% 2.096565%	\$ 2,217 \$ 2,365 \$ 1,152 \$ 1,152 \$ 148
C. F. Lundgren	.2382107	S 16

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

W. G. Brown Date A. W. Simpson Date

WGB/sb June 14,1972

AUTHORITY FOR EXPENDITURE MURPHY CORPORATION - EAST POPLAR UNIT #15 Center of NW of NW of Sec. 11, Twp. 28 N, Rge. 51E, Roosevelt Co., Montana

WELL DRILLING & CONSTRUCTION EXPENSE:	TO CSG.PT.	COMP. & EQUIP.	TOTAL COST
Drilling: Footage - 5800' @ \$8/ft.	\$ 46,400	\$	\$ 46,400
Day Work - 5 days 6 \$925/day		4,625	4,625
Loc. survey, permit & prep.	200		200
Roads, fences, cattleguards, etc.	250		250
Mud mat. & chem., incl. oil & gas	5 ,20 0		5 ,200
Fuel .	5,500		5 ,50 0
Water	250		250
Drilling bits, baskets, etc.		200	200
Commenting casing	900	950	1,850
Coring materials & services	3,500		3,500
Testing services, incl. swabbing	1,800	300	2,100
Perforating services		650	650 .
Other logs, surveys & analyses	1,400	650	2,050
Hydrafrac, acidize, etc. incl. oil		750	750
Float equip., centralizers, etc.	125	250	375
Tubular inspection, testing, etc.		1,200	1,200
Trucking, welding & other labor	500	600	1,100
Supervision & Miscellareous	1,800	1,200	3,000
Total Est. Well Drlg. & Comst. Exp.	67,825	11,375	79,200
WELL EQUIPMENT COSTS:			. '
Casing: 1000' of 9-5/8" O.D.	3,300		3,300
Casing: 6000' of 5-1/2" O.D.		13,200	13,200
Tubing: 6000' of 2-3/8" 0.D.		3,300	3,300
Packers, etc.		650	650
Casing head & connections	· 300	-	300
Xmas tree & connections		1,200	1,200
Total Est. Well Equip. Costs	3,600	18,350	21,950
Total Est. Cost of Well	71,425	29,725	101,150
LEASE EQUIPMENT:		•	
Flow lines		800	800
Other line pipe, valves & fittings		750	750
Trucking, walding & other labor		800	800
Miscellanecus		700	700
Total Est. Cost of Lease Equip.		3,050	3,050
	\$ 77 June		
Total est. Cost of Well & Lease Equip.	\$ 71,425	\$ 32,775	\$104,200

APPORTIONMENT OF TOTAL ESTIMATED COSTS

Lease No. Subject to Federal Unit Agreement WELL AUTHORIZATION FOR Location: NW/4 of NW/4 of Section Pool Name: East Poplar County: Rocsevelt State: Montana Lesse Expiration: Subject to Federal Unit Royalty and/or Encumbrances: 1/8 Royalty, plus *The lease is actually burdened with an ORR of 1/8 of 8/8, however 18.6% ORB» since this must be paid by the Placid-Murphy group who contributed the lease to the unit, their interest in proceeds allotted to the lease will be lease Ownership and Operator: Decise Ownership and Operator:

burdened with the ORR shown.

Murphy Corp. (operator) 14.675953%; Marine Oil Company 16.772517%; Munoco Company 2.096565%; Placid Oil Company 33.515035%; Carter Oil Company 16.335860%; Phillips Petroleum Company 16.335860%; C. F. Lundgren .238210% Operating Agreement: M-171 Title Approved by: Examined by Coleman, Jameson, & Lamey. They believe that our title can be established or sustained by adverse possession against anyone, except possibly owners From Geological Recommendation: of an undivided 3% of the minerals. Objective Formation and Depth: Madison 5900 Oil X Gas Reason for Drilling: Field Development. Land and Geological Departments Preliminary Estimated Cost of Completed Producer --- Gross: Net to Murphy: 15,292 Preliminary Estimated Cost of Dry Hole --- Gross: 71,425 Not to Murphy: 10.482 1000° of 9-5/8" 0.D. easing 6000° of 5-1/2" 0.D. easing 6000° of 2-3/8" 0.D. tuning Date 9-30-52 Qriginal Signed By C. H. Murphy. Jr.

Budget Account:

Copies:

11-28N-51E

Type of Well:

Additional Remarks:

Tubular Program:

APPROVED:

President

OCT 3 1952

Fele #15

AUTHORITY FOR EXPENDITURE MURPHY CORPORATION - EAST POPIAR UNIT NO. 15 C NW NW Section 11, T28N, R51E, Roosevelt County, Montana (Installation of Pumping Unit)

Pulling Unit 2 - 12 hour days @ \$300	\$ 600
Pumping Unit complete with motor	5,650
Labor & materials setting unit (complete)	950
Rods, pump, & well head equipment	3,000
Trucking, small fittings, dirt work, & incidentals	1400
Change 3500' of 2 3/8" tubing for 3500' of 2 7/8" tubing	770

Total Estimated Cost

\$11,370

Status: "C" Zone tested July 7, 1957 - 591 BFPD, 91% water (538 EWPD, 53 BOFD), 1/4" choke, TFP 100#. Shut in July 15, 1957 due to salt water disposal problem.

"B-1" and "B-2" Zones co-mingled (dead). Last test April 15, 1956 - open flow, 291 BFFD, 38% water (181 BOFD, 110 EWFD). The "B" Zones required circulating with oil 2-3 times a week to keep flowing and were blanked off on April 17, 1956; the "C" Zone was opened to produce the state allowable of 150 BOFD.

EFU #15 - state pro-rated allowable - 150 BOPD, and is located in competitive area.

Proposed Plan to Increase Production and Lower Water Volume: Blank off the "C" Zone with Baker retrievable latch on DR plug. Set in model "D" production packer at 5780'. (The "C" Zone can be reopened for production by retrieving the DR plug). Set pumping unit and pump the "B-1" and "B-2" Zones co-mingled.

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Corporation	31.448470 \$	\$ 3,576
Munoco Company	2.096565 %	238
Placid Oil Company	33.545035 %	3,814
Carter Oil Company	16.335860 %	1,857
Phillips Petroleum Company	16.335860 \$	1,857
C. F. Lundgren	.238210 \$	28

APPROVAL OF	EXPENDITURE
	1 9 1957
Division Production Supt. Dat Recommend Approval:	Recommend Approval:
Division Manager, Date	9 1057 Budget Supervisor Date Approved:
	Vice President-Operations Date
101 T. L.	

AUTHORITY FOR EXPENDITURE MURPHY CORPORATION - FAST POPLAR UNIT NO. 15 C NW NW Section 11, T28N, R51E, Rocsevelt County, Montana (Workover #1)

Pulling Unit 4 (10 hr.) days @ \$250	\$1,000
Cement, diesel and service	350
Pump truck end emulsion breaker	500
Miscellaneous labor and trucking	500
Total Estimated Cost	\$2,350

Present Status: Pumping from the "B1 & 2" Zones co-mingled, 93 BOPD, 330 BWPD, water cut 78%. The "C" Zone is blanked off with DR latching plug set in Model "D" packer at 5780".

Proposed Workover: To DOC squeeze "B1 & 2" Zone perforations 5630-hh and 565h-cht. Pull rods, spot jel on top of ER plug at 5780°. Braden-head DOC squeeze "B1 & 2" Zones with 75 sacks regular cement, over-flush to clear perforations of cement, run rods and pump test.

Structurally: "	Bl (& 2 ⁿ	Zones	Co-Min	gled	EPU #15	EPU #5	EPU #7
Company of the Compan				"B−2" Water	Zone	-3 538 78%	∞3560 50%	=3527 62%

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Corporation	31 . կ.կ.81,70% 2 . 096565%	8 739 և9
Minoco Company Placid Oil Company	33.545035%	788
Carter Oil Company	16。335860%	384
Phillips Petroleum Company	16.335860%	384
C. F. Lundgran	°538510% .	6

APPROVAL OF EXPENDITURE

2-18-58 Recommend Approval: Requested by Date Division Production Supt. Staff Production Man Date Recommend Approval: Recommend Approval: Division Manager Budget Supervisor Date Approved:

Received approva El Darado 1-5-59

Vice President-Operations Date

MJ:mm 12-18-58



AUTHORITY FOR EXPENDITURE MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 15 NW NW Section 11, T28N, R51E, Roosevelt County, Montana ____ Test the Heath Sand

PRESENT STATUS: Pumping from the B-1 & 2 Zones. Well Test 4-7-69: 324 BFPD, 94% water, 19 BOPD, 305 BMPD.

HISTORY: Workover No 1: DOC squeezed the B-1 & 2 Zones. The C-Zone is watered out. DST Heath Sand recovered 390' clean oil, 180' 0 & G cut mud, & 445' of muddy salt water with show of oil.

E. A. Polumbus, Jr. Huber No. 1, SE NE Section 10, T28N, R51E, was recompleded in the Heath Sand. Tested pumping: 229 BOPD, 98 BWPD from Heath Sand perforations 2783'-2801'.

STRUCTURALLY: Huber I'o. 1 is 17' high to East Poplar Unit No. 7. Production tested water in the Heath Sard. The Heath Sand porosity in East Poplar Unit No. 15 is 7' high to the Huber No. 1.

PROPOSAL: Run Cement Bond, Neutron and Collar Logs. Set drillable bridge plug with one sack of cement on top (block squeeze if needed). Perforate the Heath Sand polosity 4891-99' (8'), 1 hole per foot. Swab test. Acidize with 500 gallons (if needed) to clean up and sand frac with 10,000# 20-40 sand and 1000# 12-20 beads. Production test. Payout at 200 BOPD at \$1.62 per barrel net will be 48 days.

ESTIMATED COSTS

Pulling Unit, 60 hrs. at \$36 per hour	\$ 2,150
Run Cement Bond, Neutron, and Collar Logs. Set bridge plug	•
with one sack of cement	1,525
Block squeeze (if needed) with 50 sacks Latex	1,475
500 Gallon Acid Job (if needed)	575
Sand Frac with 10,000# Sand and 5000# beads	• 5,250
Facilities - Metering Separator Cond. No. 2 (Stock)	4,000
Misc. Labor, Tools, Trucking & Material	600
TOTAL ESTIMATED COSTS	\$15,575

APPORTIONMENT OF TOTAL ESTIMATED COSTS

Murphy Oil Corporation	31.448470%	\$ 4,898
Placid Oil Company	33.545035%	5,225
Humble Oil and Refining: Company	16.335860 Z	. 2,544
Drilling Specialties Company	16.335860%	2,544
Munoco Company	2.096565%	327
C. F. Lundgren .	.238210 ⁻ 6	37

APPROVAL OF EXPENDIT TRE

· Requested By:

Recommend Approval:

M. T. James 5-7-69
Date W. V. Thirnton

5-7-69

APPROVED:

Julient Julence ...

Date

cm /

AUTHORYCY FOR EXPENDICUES. MUTRRY OF CORPORATION - EASY POPLAR DEEP NO. 15 IN MR Section 11, T28M, R51E. Roosevelk Gausey, Montage (Yest The Heath Sand)

PRESENT STATES: Pumping from the D-1 & 2 Zones. Well Test 4-7-69 326 EFFD 94% Water 19 BOPD 305 120%.

MISTORY: Monkover No. 1 DSC squeezed the B-1 & 2 Honon. The C-Kone is watered out. DSM Heath Sand recovered 390° clean oil, 180° C & C ont mud, and 445° of muddy colt water with show of cil.

E. A. Polumbus, Jr. Huber Ro. 1 SE ME Section 10, 728M, R51E was recompleted in the Reath Sand. Tested pumping 200 BOPD 90 BWFD from Macth Sand perforations -2783' - 2801'.

STRUCTURALLY: Mabor No. 1 is 17' high to East Popler Unit No. 7. Production tented water in the Reach Sand. The Heath Sand porosity in East Popler Unit No. 15 is 7' high to the Huber No. 1.

PROPOSAL: Dun Coment Bond, Houtron and Coller Legs. Set drillable bridge plug with one cack of cament on top (block squeeze if needed). Perforate the Heath Sand porosity 4891-99' (8') I hale you food. Sweb test. Acidize with 500 gallons (if needed) to clean up and Send Frac with 10,0000 20-40 send and 50000 12-20 bands. Production rest.

(Pay out at 200 BORD at \$1.62 per 551. Het 40 Bays)

ESTIMATED COST

Fulling Unit, 60 Hrs. at \$36.00 per hr. Run Cement Bond, Neutron, and Collar Logs. Set bridge	\$ 2,150.00
plug with one sack of cement Block squeeze (if needed) with 50 sacks Later 500 Gallon Acid Job (if needed) Send Frac with 10,000 send and 5,000% beads Facilities - Matering Separator Class No. 2 (Stuck) Misc. Lebor, Tools, Trucking and Material TOTAL ESTIMATED COST	\$ 1,525.00 \$ 1,475.00 \$ 5,75.00 \$ 5,250.00 \$ 4,000.00 \$ 600.00 \$15,575.00

APPORTIONMENT OF YOTAL ESTIMATED COST

APPROVAL OF EXPENDITURE

liequested by:		Approved:		
M. T. Japan	-5-/-62 Cate	W. J. Thornton	Dace	

A.F.E. No. 9-1518

AUTHORITY FOR EXPENDITURE MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 15 NN NW Section 11, T28N, R51E, Roosevelt County, Montana

HISTORY: Completed in the Heath Sand perforations 4891-99'. Pumped natural 85 BFPD 12% Water Cut 73 EOPD 10 BWPD.

Sand Frac job sanded our with 8,000% sand and beads out into Heath Send formation.

Testing Record

_ Date	BEPD	H/C	BOPD	BHPD	Reperks
6-2-69	83	12	73	10	Natural Imitial Potential Pump Depth 4779' Pumping Fluid Lavel 4747'
6-10-69	346	14	298	48	
6-28-69	188	22	145	41	
7-1-69	202	35	132	71	
7-8-69	146	34	96	50	

PROPOSAL: Resand frac the Heath with 2,0000 20-40 sand, 4,0000 10-20 sand, 3,0000 10-20 sand and 3,0000 12-20 beads mixed, and 55 gallons scale inhibitor using gelled salt water as sand carrying fluid.

ESTIMATED COST

Pulling Unit, 24 hrs. at \$35.00 per hr.		\$ 850.00
Sand Frac	•	\$ 4,300.00
•		\$ 600.00
Packer and Service		\$ 300.00
Misc. Labor, Trucking and Material		,
TOTAL RESIDENCED COST		\$ 6,550.00

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation Placid Oil Company Rumble Oil and Refining Company Phillips Petroleum Company Mundoo Company C. F. Lundgren	31.4484701 33.5450351 16.3358607 16.3358607 2.0965657 _2332101	\$ 2,060.00 \$ 2,197.00 \$ 1,070.00 \$ 1,070.00 \$ 137.00 \$ 16.00
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APPROVAL OF EXPENDITURE

Requested By:

APPROVED:

ti. 7. James Date N. J. Thornton

MUJ/sb July 40, 1959 والمعادوة

A.F.E. No. 1-1500-10

AUTHORITY FOR EXPENDITURE MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 15 NW NW Section 11, T28N, R51E, Roosevelt County, Montana (Sand Frac)

HISTORY: Completed Heath Sand May, 1969. Cumulative production through December 31, 1970 21,450 BO 22,274 BW.

PRESENT STATUS: Pumping from the Heath Sand. December 4, 1970 Well Test 8 BOPD 41 BWPD 84% Water Cut. A break even operation.

PROPOSAL: Sand Frac the Heath perforations 4891-99' using Halliburton My-T-Frac treatment method with 2,500# 10-20 sand, 24,000# 8-12 sand and displaced with 19,000 gallons jelled fresh water at 1-4 lbbs. sand per gallon.

(Expected production 30-50 BOPD. Payout at 30 BOPD - 5 months.) (Work to be done in March or April.)

ESTIMATED COST

Pulling Unit, 36 Hrs. at \$37.00per hr. Sand Frac	\$ 1,350
Misc. Labor, Trucking, and Material	\$ 5,850 \$ 400
TOTAL ESTIMATED COST	\$ 7,600

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy 011 Corporation	31.448470%	\$ 2,390
Placid Oil Company	33.5450357	\$ 2,549
Rumble Oil and Refining Company	16.3358607	\$ 1,242
Phillips Petroleum Company	16.335860%	\$ 1,242
Munoco Company	2.0965657	\$ 159
C. F. Lundgren	.2382107	· \$ 18

APPROVAL OF EXPENDITURE

Requested By:

APPROVED:

M. of Lying	1-10-71			
M. T. James	Date	Ira Johnson		Date
C/	•		•	•
·		W. J. Thornton		Date

MTJ/sb January 12, 1971 والمعادية الأ

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A.F.E. No. 1-1500-10

AUTHORITY FOR EXPENDITURE MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 15 NW NW Section 11, T28N, R51E, Roosevelt County, Montana (Workover No. 3)

HISTORY: This well completed in the Heath Zone June, 1969. Well was Frac with 4000# sand and 4000# of glass beads, but sanded out with 4000# of sand and 2000# beads out in formation. Put well to pumping with a potential of 346 BFPD 14% BS&W 298 BOPD and 48 BWPD. March, 1971 test 56 BFPD 88% BS&W 7 BOPD 49 BWPD (uneconomical). Accumulated production as of March 1, 1971 is 21,924 BO and 24,762 BW.

<u>PROPOSAL</u>: Acidize with 500 gallons 15% HCL with 110 gallons of Treatolite WF-23 (combination scale and corrosion inhibitor) added and overflushed with 100 bbls. of formation fluid.

JUSTIFICATION: This well has been pulled five (5) times in the past year for tubing leak or pump problem (1 time for tubing - 4 times for pump). On each job the pump was filled with gyp or the pump bbl. corroded into. Pump expenses for the past year have been \$650. The above proposal should last for a period of 3 months and any future inhibator squeezes would be able to be done at approximately 1/3 this cost (if pressures are low enough) by doing job down the annulus. Production should increase by 25 to 100 BOPD if perforations are gyped up as is indicated. Decline curves for EPU 7 and 15 are enclosed for comparrison.

ESTIMATED COST

Pulling 15 Hrs. at \$37.00 per hr.	•	· \$	550
Acid and Pump Truck		\$	625
Treatolite WF-23		\$	275
Packer Rental		\$	400
Misc. Labor, Material and Trucking		\$	150
Total Estimated Cost		. \$	2,000

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	•	ė	629
Munoco Company	2.096565%		Š	42
Placid Oil Company	33.545935%		Š	671
Humble Oil and Refining Company	16.335860%	•	Š	327
Phillips Petroleum Company	16.335860%		Ś	327
C. F. Lundgren	.238210%	- •	Ś	4

APPROVAL OF EXPENDITURE

Requested By:

Approved By:

M. T. James

Date

IB/MTJ/sb
March 29, 1971

BATE JOB COMPLETED 4-21-21
AFFROXIMATE COST 2.223.00
BY SSEQUENTS

MURPHY OIL CORPORATION
AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 15
NW NW SECTION 11-T28N-R51E, ROOSEVELT COUNTY, MONTANA

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PROPOSAL & JUSTIFICATION

Propose to acidize the Heath perforations (4,891 - 4,899') with 500 gallons of 15% regular acid and squeeze 165 gallons of scale inhibitor and 110 gallons of corrosion inhibitor into the formation and leave shut-in overnight.

This same type of job was performed April 20, 1971, and increased the production from 6 BOPD and 45 BWPD (89% BS&W) to 30 BOPD and 230 BWPD (87% BS&W). The well was treated again in October, 1971, with 110 gallons of acid and 110 gallons of scale and corrosion inhibitor because test run on the scale and corrosion inhibitor returns were low. Production did not increase but protection of the pump was increased. This job can be done down the annulus. Latest well test: 10 BOPD and 181 BWPD (95% water-cut).

Expected payout with an increase of 20 BOPD: 20 BOPD X \$2.06/bbl. = \$41.20/day; \$1,575 estimated cost * \$41.20 = 39 days.

ESTIMATED COST

500 gallons of 15% acid Pump Truck Scale and Corrosion Inhibitor Miscellaneous Labor, Material and Trucking		\$_	225 250 850 250
TOTAL ESTIMATED COST	•	S 1	575

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 495
Placid Oil Company	33.545035%	529
Humble Oil and Refining Company	16.335860%	257
Phillips Petroleum Company	16.335860%	. 257
Munoco Company	2.096565%	33
C. F. Lundgren	.238210%	4

APPROVAL OF EXPENDITURE

Requested:

APPROVED:

W. G. BROWN

2-24-72

<u>~`</u> ₹

ate

WGB/sb/cm 2-29-72

Cate Joh Completed - 3-13-72

Approximate Cost 1725 --

By BBBogenic

File

A.F.E. No. 2-1514-10

1,152

148

MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 15 NW NW Section 11, T28N, R51E, Roosevelt County, Montana (Workover No. 5)

Proposal and Justification: It is proposed to squeeze the Heath formation and reopen the B-1 & 2 Zones and pump test.

East Poplar Unit No. 15 is pumping from the Heath formation at the rate of 238 BFPD 5 BOPD 233 BWPD 98% BS&W (May, 1972 test) which is uneconomical. The pumping fluid level shows 200' of fluid over the pump. A Wasp bridge plug and 1 sack of cement was set at 4992' leaving the B-1 & 2 perforations open. The last B-Zone test was May, 1969 showing 319 BFPD 19 BOPD 300 BWPD 94% BS&W. Three acid jobs and inhibitor squeezes (scale and corrosion) have been tried on the Heath to increase production with the last two failing. The A Zone is a potential pay in the event the B-1 & 2 fail to prove economical. B-Zone production should be as good as the last test shows or 20 BOPD. Payout at 20 BOPD would be 261 days using \$1.36 per bbl. net.

ESTIMATED COST

•			
Pulling Unit, 70 hrs. at \$40/hr.		:	\$ 2,800
Packer and Manifold Rental			1,000
Cement and Services			1,500
Drilling Equipment Rental	•	•	750.
500 Gallon Acid Job, if needed			500-
Misc. Labor, Material and Supervision	n		50Q _i
TOTAL ESTIMATED COST			\$ 7,050
<u></u>			
APPORTION	MENT OF TOTAL ESTIMATE	D COST	
Murphy Oil Corporation	31.448470%		\$ 2,217
Placid Oil Company	33.545035%		2,365
Humble Oil and Refining Company	16.335860%		1,152

APPROVAL OF EXPENDITURE

16.335860%

2.096565%

Requested by:

Munoco Company

C. F. Lundgren

Phillips Petroleum Company

Approved by:

W. G. Brown Date K. W. Simpson Date

This workover went much better than anticipated thereby resulting in spending less money than planned. The big saving was in the pulling unit time because of cement and bridge plug drilling better than planned. Roustabout crews were used to do a lot of the hookup that the pulling unit crews normally did.

A bridge plug was not used that had been planned on which resulted in a savings of \$464.5 WGB/sb The acid job was not required for Je complete of June 14,1972 this job as had been planned.

At this time the well is pumping 400 BFPD 8 BOPD 392 BWPD 98% BS&W. This is getting 10 10 X 6 5 5 5 6 6 5 5 better and should be at the 20 BOPD rate in about 10 days as more of the formation water is unloaded.

No Copies of These, let m keeps A. F. E. No. 2-1514-10 Bally Supplement No. 1

MURPHY OIL CORPORATION
AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 15
NW NW SECTION 11-T28N-R51E, ROOSEVELT COUNTY, MONTANA

WORKOVER NO. 5

SUPPLEMENT JUSTIFICATION

This supplement is necessitated by less expense than anticipated on the original Authority for Expenditure.

The major area of savings was in pulling unit time because drilling of cement and bridge plug took less time than anticipated. Also one less bridge plug was used, a planned acid job was not required and roustabout crews were used at a lesser cost to do some of the work usually performed by the pulling unit crews.

ESTIMATED COST

Original Authority for Expenditure \$ 7,050
Revised Estimated Cost 5,600

Supplement No. 1 Credit \$ (1,450)

APPORT OFFICERT OF STREETENTAL CREDIT

31.448470%	\$ (457)
33.545035%	(486)
16.335860%	(237)
16.335860%	(237)
2.096565%	(30)
.238210%	(3)
	33.545035% 16.335860% 16.335860% 2.096565%

APPROVAL OF SUPPLEMENT

Requested:

APPROVED:

W, G, BROWN

8-7-72

Date

— _

Date

,387/cm -0-15-72

> Date Completed 7-26-72 Approximate Cost - \$5,606 (1,450) Work Performed By - L. C. Loegering

MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 15 WW Section 11, T28N, R51E, Roosevelt County, Montana (Change Out Tubing)

PROPOSAL & JUSTIFICATION: It is proposed to change out the bottom 1000' of 2-7/8" tubing.

This well has had 3 tubing leaks in the bottom 1000' of tubing in the past year. In an effort to curb the leak frequency this tubing should be changed on the next leak. Pay out of this change out would be approximately 2 tubing leaks not counting any lost production. This-well is producing at the rate of 321 BFPD 17 BOPD 304.BWPD 95% BS&W.

ESTIMATED COST

Pulling Unit	\$ 900
1000' of Cond. 2 2-7/8" Tubing	\$ 1,750
1000' of Cond. 4 2-7/8" Tubing	(\$ 1,000)
Pump and Anchor Repair	\$ 1,000
Misc. Labor, Material and Trucking	\$ 250
Total Estimated Cost	\$ 2,900

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$	912
Placid Oil Company	33.545035%	\$	973
Exxon Company, U.S.A.	16.335860%	\$	474
Phillips Petroleum Company	16.335860%	.\$	474
Munoco Company	. 2.096565%	\$	60
C. F. Lundgren	238210%	\$	7

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

W. G. Brown Date M.W. Simpson Date

Phis gob was Completed as planned, the

Total estimated cost was approximately

roce—less, than the actual Cost, Due

To Re-Ruming the the anchor + The small

cost of the fump Repair god

WGB/sb : January 8, 1975

A.F.E. No. 8-1529-10

MURPHY OIL CORPURATION AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 15 NW NW Section 11, T29N, R51E, Roosevelt County, Montana (Replace Flowline)

Due to continued leaks in this flowline which lays 100% across cultivated farmland - it is proposed to replace 2650' of 3'' steel line with 2'' fiberglass line. The landowner has given permission to re-lay the line in road ditch instead of across farmland. The line would lay east from East Poplar Unit No. 15 and tie into existing 5-1/2" total fluid line which runs from "N" Battery to the South Central "D" Battery.

ESTIMATED COST

2650 of 2" Fiberglass Pipe, Glue Kits and Connections	\$ 3,000
Labor to Ditch, Lay and Cover	\$ 2,400
Misc. Labor, Material and Supervision	\$ 500
Total Estimated Cost	\$ 5,900

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 1,855
Placid Oil Company	33.545035%	\$ 1,979
Phillips Petroleum Company	16.335860%	\$ 964
Exxon Company, U.S.A.	16.335860%	\$ 965
Munoco Company	2.096565%	\$ 124
C. F. Lundgren	.238210%	\$ 14

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

8. Melear

September 28, 1978

A.F.E. No. 8-1533-10

MURPHY OIL CORPORATION AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 15 NW NW Section 11, T28N, R51E, Roosevelt County, Montana

PROPOSAL & JUSTIFICATION: One of the wrist pins broke on the American 160 unit, breaking the pitman arm, the opposite wrist pin, and damaging the saddle bearing base.

It is proposed to repair the unit. The last test on this well was 10 BOD and 197 BWD on 11-1-78.

ESTIMATED COST

Two Wrist Pins	•	\$	1,000
Machine work on Pitman Arm and S	Machine work on Pitman Arm and Saddle Bearing		
Roustabout Crew		Ś	650
Trucking		Ś	300
Freight	·	Ś	50
Total Estimated Cost		Š	2,500
APPORT	IONMENT OF TOTAL ESTIMATED COST	1	
		Ē	
Murphy Oil Corporation	31.448470%	<u>.</u>	786
Murphy Oil Corporation Placid Oil Company	31.448470% 33.545035%	. s	839
Murphy Oil Corporation Placid Oil Company Exxon Company, U.S.A.	31.448470% 33.545035% 16.335860%	· \$	
Murphy Oil Corporation Placid Oil Company	31.448470% 33.545035%	·	839
Murphy Oil Corporation Placid Oil Company Exxon Company, U.S.A.	31.448470% 33.545035% 16.335860%	·	839 408

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

Billy G. Melear

11.12.13

W. Simpson

Dette

(500)

BGM/sb November 15, 1978

Port the 12/1/2

A.F.E. NO. 5-1501-10

MURPHY OIL USA, INC. AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 15 NW NW SECTION 11, T28N, R51E, ROOSEVELT COUNTY, MONTANA

PROPOSAL & JUSTIFICATION:

The tubing anchor is stuck in the hole on EPU No. 15 and it has developed a hole in the tubing. It is proposed to back off the tubing and jar the anchor out of the hole.

ESTIMATED COST

Rig	\$	7,000
Fishing Tools and Jars		6,500
Hydro-tester		1,300
Wire Line Truck		4,500
Supervision and Miscellaneous	-	1,700
Total Estimated Costs	\$	21,000

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil USA, Inc.	31.448470%	\$ 6,604
Petro-Lewis Corporation	33.545035%	7,.044
Exxon Company USA	16.335860%	3,431
Phillips Petroleum Company	16.335860%	3,431
Munoco Company	2.096565%	440
C. F. Lundgren	.238310%	50

APPROVAL OF EXPENDITURE

				•
Requested by:		Approved by:		
6' 1	, *	/ak.h	/	
Karpengla Ka	inde 1-15 %	ah n	1. A.	1/23/-
Raymond Reede	Date	A. W. Simpson	(Daye
		• -	•	• /

RR/jh January 15, 1985

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CASH EXPENDITURE

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MURPHY OIL USA, INC.
AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 15
NW NW SECTION 11, T28N, R51E, ROOSEVELT COUNTY, MONTANA
EAST POPLAR FIELD

This A.F.E. was underspent because the fishing tools and the wire line truck were lass than anticipated.

ESTIMATED SUPPLEMENTAL COSTS

	Original	Actual	Supplement #1
Rig	\$ 7,000	\$ 6,880	\$ (120)
Fishing Tools	6,500	5,691	(809)
Hydro-Tester	1,300	941	(386)
Wire Line Truck	4,500	3,313	(1,187)
Supervision & Misc.	1,700	-0-	. (1,700)
Total Cost	\$21,000	\$16,798	\$ 4,202

APPORTIONMENT OF SUPPLEMENTAL COSTS

Murphy Oil USA, Inc.	31.448470%	\$ 6,604	\$ 5,283	\$ 1,321
Fairway Resources, Inc.	29,351906%	6,164	4,931	1,233
Phillips Petroleum Co.	16.335860%	3,431	2,744	687
Exxon Company USA	16.335860%	3,431	2,744	687
TPEX Exploration, Inc.	4.193129%	880	704	176
Munoco Company	2.096565%	440	352	88
C. F. Lundgren	.238210%	50	. 40	10

APPROVAL OF EXPENDITURE

	· · ·	
Requested by:	Approved by:	
0 0		
Roymond Reede	4-25-85 (d. hosymi	4/29/85
Raymond Reede	Date A. W. Simpson	Date

DATE JOB COMPLETED
APPROXIMATE COST
BY

RR/jh April 25, 1985

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50C

CASH EXPENDITURE

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MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 15 NW NW Section 11, T28N, R51E, Roosevelt County, Montana (Workover No. 4)

Proposal and Justification: It is proposed to acidize the Hearh perforations, 4891-4899', with 500 gallons of 15% regular acid and squeeze 165 gallons of scale inhibitor and 110 gallons of corrosion inhibitor into the formation and leave shut in overhight.

This same type of job was preformed April 20, 1971 and increased the production from 51 BFPD 6 BOPD 45 BWPD 897 BS&W to 260 BFPD 30 BOPD 230 BWPD 877 BS&W. The well was treated again in October of 1971 with 110 gallons of acid and 110 gallons of scale and corrosion inhibitor because test ran on the scale and corrosion inhibitor returns were low. Production did nor increase but protection of the pump did. This job can be done down the annulus. Latest well test 191 BFPD 10 BOPD 181 BWPD 95% W.C..

Expected payout with an increase of 20 BOPD - 20 BOPD X \$2.06/bbl. - \$41.20/day $$1575 \pm $41.20 = 39 day payout$.

ESTIMATED COST

500 Gallons of 152 Acid Pump Truck Scale and Corrosion Inhibitor Misc. Labor Material and Trucking Total Estimated Cost			225 250 850 250
APPOR	TIONMENT OF TOTAL ESTIMATED COS	_	
Murphy Oil Corporation Munoco Company Placid Oil Company	31.448470% 2.096565% 33.545435%	\$ \$ \$	495 529

APPROVAL OF EXPENDITURE

16.335860%

16.335860%

.238210%

Requested by:

C. F. Lundgren

Homble Oil and Refining Company

Phillips Petroleum Company

Approved by:

W.	G.	Brown	A. W. Simpson	Dave.

WCB/sb February 24, 1972

A.F.E. No. 2-0410-010

MURPHY OIL USA, INC.
AUTHORITY FOR EXPENDITURE
EAST POPLAR UNIT NO. 15
NW NW SECTION 11, T28N, R51E
ROOSEVELT COUNTY, MONTANA

REPAIR WELL

PROPOSAL & JUSTIFICATION:

This well developed a tubing leak. A service rig was moved on to the well to pull the rods and tubing. The tubing was stuck in the hole. The tubing was cut off at 4829'. Jars and drill collars and a fishing tool were run in the hole, but couldn't jar loose. Tried to mill over fish but it acted like we were milling on the casing. Put well back on production.

ESTIMATED COST

Rig	Ş	8,000
Wire Line		2,500
Rental Tools		6,600
Tubing Testers		900
Supervision & Miscellaneous		1,000
TOTAL ESTIMATED COST	\$ 1	18,000

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil USA, Inc.	60.363718%	\$10,865
Doil Oil & Gas	20.965647%	3,774
Exxon Company U.S.A.	16.335860%	2,941
Munoco Company	2.096565%	377
C.F. Lundgren	.238201%	43

APPROVAL	OF EXPENDITURE
Requested by:	Approved by:
Raymano Reede 4-15-9: Raymond Reede Da	te Sidney Campbell (Date)
	Paul Ramsey DAte
RR/jh April 15, 1992	DATE JOB COMPLETEDAPPROXIMATE COST

. สมเดน รับสี ช.วิจินว่า (SUBMIT IN TRIPLICATE)

UNITED STATES DEPARTMENT OF THE INTERIOR **GEOLOGICAL SURVEY**

Land Office Billings

Lonso No. Fee Land-Reynolds

Unit East Poplar

MAP = SUNDRY NOTICES AND REPORTS ON

NOTICE OF INTENTION TO DRILL	 SUBSEQUENT REPORT OF WATER SHUT-OFF
NOTICE OF INTENTION TO CHANGE PLANS	 SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING
NOTICE OF INTENTION TO TEST WATER SHUT-OFF	 SUBSEQUENT REPORT OF ALTERING CASING
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL	 SUBSEQUENT REPORT OF REDRILLING OR REPAIR
NOTICE OF INTENTION TO SHOOT OR ACIDIZE	 SUBSEQUENT REPORT OF ABANDONMENT
NOTICE OF INTENTION TO PULL OR ALTER CASING	 SUPPLEMENTARY WELL HISTORY

(INDICATE A	BOVE BY CHECK MARK NATURE OF REPORT, N	OTICE, OR OTHER DATA) ,	
,		March 3	, 1953
			2
Well No15_locate	ed .660ft. from N line and .	660 ft. from W line of	sec. <u>11</u>
C NW/4 NW/4 Sec. 11	28N 51E	1.	
() Sec. and Sec. No.)	(Twp.) (Range)	(Meridian)	
East Poplar	Roosevelt	Montana	*******
(Field)	(County or Subdivision)	(State or Territory	*
The elevation of the desired	or above sea level is210\1_ft.	HT 3-5.	<i>5</i> 3
	DETAILS OF WORK		70
(State names of and expected depths to ob	jective sands; show sizes, weights, and length ing points, and all other important propor	is of proposed casings; indicate mude sed work)	ling jobs, coment-
Dowell, 15% Regular acid	Zones, 5636 to 5644 and 5 d. Maximum pressure 2350 d per minute. Final pres	#. Minimum pressure sure after pumping:	2250#。 1474#。
	d per minute. Final pres in 24 minutes; oil to sur		

pit. 1/hm choke, TFP: 250# TSIP: 600# CSIP: 800# BS&W: 2%

Acidized C Zone, 5800 to 5817, with 1000 gallons Dowell, 15% Regular acid. Maximum pressure 2800%. Displaced 3.5 barrels at 2800%. Final pressure after pumping: 1600#. Flowed acid to surface in 137 minutes. Well died after 167 minutes. Made 3 small heads in 8 hours.

2-17-53

I understand the	t this plan of work must receive approval in writing	by the Geological Survey before operations may be commenced.
Com pany	Murphy Corporation	
Address	Box 76	,
	Poplar, Montana	By Harold milan
**********		Title District Production Supt.

U. S. GOVERNMENT PRINTING OFFICE 18-6437-3

Pona 9-331 (May 1963)	NITED STATES ARTHLENT OF THE INTI	ERIOR (Other Instru-	LICATE* j on re- 5. LEAS!	Form approved. Budget Bureau No. 42-R1424. B DESIGNATION AND SERIAL NO.
(Do not use this form for Use "Al	NOTICES AND REPORT	S ON WELLS	voir.	t Peck
OIL GAS WELL OT NAME OF OPERATOR	\	Geological Survey	Ras S	OR LEASE NAME
P. O. Sow 547 Pont 4. Location of well (Report loc See also space 17 below.) At surface	ar Montana atloh clearly and in accordance with	MAY 2 3 1969 any State requirements Billings,	9. wnm 6 5 6 5 40, sra 25 5 5 5	
	h line and 660' from		11. sec	TRUE OF AREA IN RESIDENT TO THE RESIDENT TO TH
14. PERMIT NO.	15. ELEVATIONS (Show wheth	•	के दाहर	NTY OR PARISH 13. STATE
16. Che	ck Appropriate Box To Indica		_ * • • ±	
NOTICE OF	F INTENTION TO:		SUBSEQUENT REP	BT OF:
TEST WATER SHUT-OFF	PULL OR ALTER CASING MULTIPLE COMPLETE	WATER SHUT-OF	IMENT	# P
REPAIR WELL (Other)	CHANGE PLANS Zone Change XX	(Other) (Note: Re		ple completion on Well
PRESENT STATUS: F	rumping from the B-1 & 305 BWPD.	2 Zone. Well To		24 BYPD 947.
with one sack of o Sand porosity 4891	ment Bond, Neutron and sement on top (block s 99' (8') 1 hole per man up and Sand Frac w n Test.	queeze if needed) foot. Swab test.	et drillable). Perforate . Acidise wi	the Heath th 500 gallons
			A Abbailge of the second of th	
18. I hereby certify that the fore SRIGINAL SIGNED	going is true and correct ED BY M: T. JAMES TITLE	<u>-District-Superi</u>	وَ الْمُؤْرِّةِ اللهِ اللهِ الله	DATE: 1969
(This space for Federal or S	tate office use)	ACTING DY TILLO	T THOMBER	MAY 2 3 1969
CONDITIONS OF APPROVA	L, IF ANY:			Systematics of the systematics o

STATE

MURPHY -UNITED STATES DEPARTMENT OF THE INTERIOR SUBMIT IN TRIPLICATE* (Other Instructions on reverse Bide)

(Other)

Form approved. Budget Bureau No. 42-R1424. 5. LEASE DESIGNATION AND BERIAL NO.

GEOLOGICAL SU	JRVEY
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SUNDRY NOTICES AND REPORTS ON WELLS (Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.

Use "APPLICATION FOR PERMIT THE SUCH PROPOSALS (A CONTROLL)

6.	IF INDIAN,	ALLOTTEE	OR	TRIBE	NAME
		••			
	-	-			

Peck

make and only to

- <u>-</u>	1	-	II. OHIT AGREEMENT, NAME
WELL WELL OTH	¢B .	MAY 2 5 1969	Rast Poplar Unit V
2. NAME OF OPERATOR		WIFT 2	8. FARM OR CEASE NAME
Murphy Oil Corporat	ion		Rast Poplar Unit
3. ADDRESS OF OPERATOR	{	Billings, Montana	9. WELL NO.
P.O. Box 547. Poplar	- Montons	Dimingo,	No. 15
4. LOCATION OF WELL (Report locat See also space 17 below.)	ion clearly and in accordance w	ith any State requirements.	10. FIELD AND POOL, OR WILDCAT
At surface			Rast Poplar Unit
,	1,00		SURVEY OR AREA
660' from the North	line and 660' from	the Wast line	NW NW Section 11,
ood from the Rolen	Time and ood from	the west line	" moon beld " h
14. PERMIT NO.	15. ELEVATIONS (Show wh	ether DF. RT. GR. etc.)	12. COUNTY OR PARISH 13. STATE
	,		
	2104' G.	L	Roosevelt Montana
16. Check	Appropriate Box To Indi	cate Nature of Notice, Repo	t, or Other Data
NOTICE OF I	NTENTION TO:	1	SUBSEQUENT REPORT OF:
TEST WATER SHUT-OFF	PULL OR ALTER CASING	. WATER SHUT-OFF	BEPAIRING WELL
PRACTURE TREAT	MULTIPLE COMPLETE	PRACTURE TREATMEN	T ALTERING CASING
SHOOT OR ACIDIZE	ABANDON*	BHOOTING OR ACIDIZI	
REPAIR WELL	CHANGE PLANS	(Other)	<u> </u>

SS

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.) Zone Change 17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.) in and to be

PRESENT STATUS: Pumping from the B-1 & 2 Zone. Well Test 4-7-69 2324
Water Cut 19 BOPD 305 BWPD. BFPD

PROPOSAL: Run Cement Bond, Neutron and Collar Logs. Set drillable brigge plug with one sack of cement on top (block squeeze if needed). Perforate the Heath Sand porosity 4891-99' (8') I hole per foot. Swab test. Acidize wath 3000 (if needed) to clean up and Sand Frac with 10,000# 20-40 Sand and 5,000# 12-20 Beads. Production Test. Sand porosity 4891-99' (8') I hole per foot. Swab test. Acidize with 500 gallons ind part of the content of particles

18. I hereby certify that the foregoing is true and correct SIGNED BY M. T. JAMES				<u>:</u>	.:. 72 196	
(This space for Federal or State office use)		-District Superintendent	. 7		3 1969	
APPROVED BYCONDITIONS OF APPROVAL, IF ANY:	TITLE		DATE	101744 3		

(SUBMIT IN QUADRUPLICATE)

TO

OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA BILLINGS OR SHELBY

	N C	T	1 (CE			
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PERM							
APPE OF 7						EN	1

OF THE COMMISSIO

SUNDRY NOTICES AND REPORT OF WELLS

		May 22		69
	Mark Na	ature of Report, Notice, or Other Data)		-
Zone Change	XX			}
Notice of Intention to Abandon Well		Report of Fracturing		
Notice of Intention to Pull or Alter Casing		Supplementary Well History		
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	268 L	97
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	BILLING	953
fotice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	417.1.	L .
votice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	GAS . CONS	. co:////
Notice of Intention to Drill	1	Subsequent Report of Water Shut-off	CEI	ED

Following is a notice	of intention to do	work } on land }	leased described as :	follows: Last Poplar Un	it No. 15
MON	rana Late)		csevelt (County)	Bast Poplar	Unit Field)
			T28U (Township)		
The well is located		n line and	660 ft. from	line. of Sec	11
			M THE WELL LOCATIO		
The elevation of the d	errick floor above t	he sea level is	2104' G.L.	•	
DEAD CADEEULLY		DEMANA OF DE	AN OF WORK	To 1	CAD CADEDIN

READ CAREFULLY

DETAILS OF PLAN OF WORK

READ CAREFULLY

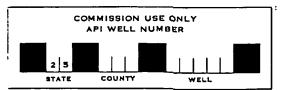
(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK RESULT

PRESENT STATUS: Pumping from the B-1 & 2 Zone. Well Test 4-7-69 324 BOPD 94% Water Cut 19 BOPD 305 BWPD.

PROPOSAL: Rum Cement Bond, Neutron and Collar Logs. Set drillable bridge plug with one sack of cement on top (block squeese if needed). Perforate the Heath Sand porosity 4891-99' (8') 1 hole per foot. Swab test. Acidize with 500 gallons (if needed) to clean up and Sand Frac with 10,000# 20-40 Sand and 5,000# 12-20 Beads. Production Test.

Approved subject to conditions on reverse of form	Company MIRPHY OIL CORPORATION
DateORIGINAL SIGNED BY:	ORIGINAL SIGNED BY M. T. JAMES
By J. R. Hug. Supervisor District Office Agent Title	Title District Superintendent Address P.O. Box 547 Poplar Montana 59255



NOTE:-Reports on this form to be submitted to the District Agent for Approval in Quadruplicate

- NURP	NY					
	HAUTED CTA	TES	SUBMIT IN TH	RIPLICATE.	Form approv	
DEPARTI	MENT OF TH	E INTERIO	R (Other instruct	ions on re-	5. LEASE DESIGNATION	au No. 42-R1424. And Serial No.
	SEOLOGICAL S			ł	-	111
			1 \4/51 6		6. IF INDIAN, ALLOTTE	E OR THIBE NAME
SUNDRY NOT	ICES AND RE	EPORIS OF	N WELLS	rvoir		
(Do not use this form for propos Use "APPLICA	TION FOR PERMIT	for such prop	osals) Poginal Survey		Fort Peck	
1.			EIVED		7. UNIT AGBEEMENT NA	ME 18:
WELL GAS WELL OTHER		,, , ,		_[East Popla	r Unit
2. NAME OF OPERATOR		NUL	1 1 1969		8. FARM OR LBASE NAM	4E :
Murphy Oil Corporat:	lon		1303	-	Rast Poplar	r Whit
·					William Rolling	÷
P.O. Box 547, Poplar 4. LOCATION OF WELL (Report location c	early and in accord	59255incs	Montana		10. FIELD AND POOL, O	B.WILDCAT
See also space 17 below.) At surface				≡6.	4 A E E	집 선흥되린 사
		i.		}-	East Popla	BLE. AND
660' from the North	line and 660	nt firem th	a Wast line		NW NW Sect	
ood from the Abith	Time and ook	J IIOM CH	e west line	1	T28N R51R	7 1 3
14. PERMIT NO.	15. ELEVATIONS (Sh	now whether DP, RT	, GR. etc.)		12. COUNTY OR PARISH	1 13. STATE
	2104	G.L. V			Roosevelt	Monte na
16. Charl A			ure of Notice, Ro	anort or Ot	her Data	
:	•	, maicale 14ai	ore or radice, in		₩ ₩₩₩	
NOTICE OF INTEN	rion to:		·	SUBSECUE	NT REPORT OF	· · · · · · · · · · · · · · · · · · ·
TEST WATER SHUT-OFF	UIL OR ALTER CASIN	o	WATER SHUT-OF	P	REPAIRING V	VELL
FRACTURE TREAT	CULTIPLE COMPLETE		FRACTURE TREAT		ALTERING CA	- 5 J- 1
((BANDON*		SHOOTING OR AC		ABANDONME	TT.
	HANGE PLANS		(Other)ZO	port results of	f multiple completion	on Well
(Other)		le all partinout d	Completion	n or Recomplet	ion Report and Log for	m.), ·
17. DESCRIBE PROPOSED OR COMPLETED OPE proposed work. If well is directionent to this work.) *	nally drilled, give su	ibsurface location	s and measured and	true vertical	depths for all markers	and zones perti-
Ran WASP Bridge Plug on	endimaldma C	int ton of	-1 at 500	01 Pu-	and I made of	
on top of bridge plug.						
water and tested casing						
Formation from 4891-4899						
foot. Set retrievamation						
Perforations 4891 to 48			• •	*		
tan file and a second			•	•		
Broke formation with 30	bbls. oil at	4200# at	9-1/2 BPM.			
	ebs B.E.	23.	*			도 - 현급등 등 조조성설
2000# 20-40 Sand at 1/24				4100#	10 BPM	
2000# 20-40 Sand at 3/4/	-	• 11	. •	4050# 4000#	10. BPN =	
4000# 10-20 Sand and 12-	20 Beads at	i# per gai	Lion	4000	10 BPM	
tiall assistant and the 600	0# 20 40	2000# 1	10.20 send a	-4 2000#	12-20 bonda a	
Well sanded out with 400 into formation.	U# ZU-40 SBB	ia, 2000# 1		ud Zooon	12-20 beaus	, u.c.
into formation.						
Broke circulation and di	splaced hole	with salt	water. Re	versed sa	nd out of hal	e
Washed down 3 joints of	-		water ne	101000 00	1732 p 23	
The second secon				•	SECTION OF	_ EFE)
Initial Potential: 4 Hr	. Test Pump	ed 57.68 E	BF 14% W.C.	= 346	BFPD 298 BOP	בבים
48 BWPD.		•				
18. I hereby certify that the foregoing is	true and correct					
RITINIA SIGNAL E						
SIGNED		TITLEDie	trict Super	intendent	DATE June	10, 1969
(This space for Federal or State office	use)				***	

*See Instructions on Reverse Side

APPROVED BY CONDITIONS OF APPROVAL, IF ANY:

ACTING DISTRICT ENGINEER

Form No. 2

GENERAL RULES
201, 202, 213, 216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)

TO

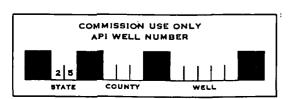
OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA BILLINGS OR SHELBY

NOTICE
THIS FORM BECOMES A
PERMIT WHEN STAMPED
APPROVED BY AN AGENT
OF THE COMMISSION.

SUNDRY NOTICES AND REPORT OF WELLS

	Zone Change
Notice of Intention to Abandon Well	Report of Fracturing
Notice of Intention to Pull or Alter Casing	Supplementary Well History
Notice of Intention to Shoot, Acidize, or Cement	Subsequent Report of Abandonment
Notice of Intention to Redrill or Repair Well	Subsequent Report of Redrilling or Repair
Notice of Intention to Test Water Shut-off	Subsequent Report of Altering Casing
Notice of Intention to Change Plans	Subsequent Report of Shooting, Acidizing, Cementing
Notice of Intention-to Drill	Subsequent Report of Water Shut-off

	Notice of Intention	to Shoot, Acidize, or Ceme	nt	Subsequ	ent Report of A	bandonment		
	Notice of Intention	to Pull or Alter Casing		Supplen	entary Well Hist	ory		
	Notice of Intention	to Abandon Well		Report	of Fracturing			
				Zone	Change			_
•		(Indicate Above by C	heck Mark N	ature of Re	port, Notice, or	Other Data)		
						June	10	19 69
	WARAAA	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		· WEEKE	1			,
Follov	ving is a report	of work done	on land	leased	described as	s follows:		
	•				LEASE	Rast Popla	r Unit Ho.	. 15
	MONT	A BT A	1	locsevel	Ł	. R a	st Poplar	Unit
•••••	MUNTA	NA		(County)	-		(Field)	
Wall	No. 15	M M	Section	11	T28N	RSIE		NPM
well	INO	(m. sec.)			(Township)	(Range)	(Me	eridian)
The w	vell is located	1980 ft. from	line and	1980	ft from	H line of	Sec 11	
		, , , ,	•		•	,		
LOCA	TE ACCURATEL	Y ON PLAT ON BACK		_		ION, AND SHO	W LEASE B	OUNDARY
The e	levation of the der	rick floor above the sea	level is	2104' C	.L.			
REAL	CAREFULLY	DE	TAILS OF	PLAN OF	WORK		READ CA	REFULLY
(St	ate names of and ex	pected depths to objective	sands; show	size, weight	s, and lengths o	of proposed casin	gs: indicate m	udding jobs,
cement	ing points, and all of	ther important proposed work	k, particulari	y all details	results Shooting,	Acidizing, Fractu	ring.)	
			DETAIL	S OF WO	RK			
			R	ESULT				
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					•	STILL & GAS OF	* **	
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Appr	oved subject to co	onditions on reverse of f	form	Con	npany	THE OUT CO	APOHAT 103	······································
Data	JUN 2 6 1989			ם	.00174	P		
Date		SIGNED BY		ву		ا مورون المورون	81	Ja.
Ву	Judson D. Sweet,	Petrolaum Engineer		. Titl	e Distric	t Superinte	andent "	# W
	District Of	fice Agent Title				867 Ban'	lew Monto	
				Add	ress	ox 547, Pop	ici, mult	J76J



NOTE:-Reports on this form to be submitted to the District Agent for Approval in Quadruplicate

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

OVER

3 REPORTER PRTG. & SUPPLY CO.

Ran WASP Bridge Plug on wireline. Set top of plug at 5000'. Dumped 1 sack of cament on top of bridge plug. How PBTD 4992'. Installed BOP, filled 5-1/2" cashs with salt water and tested casing and bridge plug to 15000, held OK. Perforated the Heath Sand Formation from 4891-4899' with Wireline Sabre Jet Gum and 50 gram jets at 1 hole per foot. Set retrievamentic packer at 4846', tail pipe at 4877'. Sand Frac Heath Sand Perforations 4891' to 4899' as follows:

Broke formation with 30 bbls. oil at 4200# at 9-1/2 BPM

. . .

2000# 20-40 Sand at 1/2# per gallon	4100#	10 BPM
2000# 20-40 Sand at 3/4# per gallon	4050#	10 BPM
4000# 10-20 Sand and 12-20 Beads at 1# per gal.	4000#	10 BPM

Well sanded out with 4000# 20-40 sand, 2000# 10-20 sand and 2000# 12-20 beads out into formation.

Broke circulation and displaced hole with salt water. Reversed sand out of hole. Washed down 3 joints of tubing to clean hole.

Initial Potential: 4 Hr. Test Pumped 57.68 BF 14% W.C. - 346 BFPD 298 BOPD 48 BWPD.

Approve

Date ity

GORM:

Form No. 2 GENERAL RULES 201, 202, 213, 216, 219, 233.1

(i)//

(SUBMIT IN QUADRUPLICATE) TO

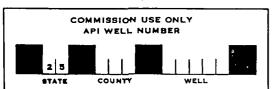
NOTICE
THIS FORM BECOMES A
PERMIT WHEN STAMPED
APPROVED BY AN AGENT
OF THE COMMISSION.

OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA BILLINGS OR SHELBY

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention-to Drill		Subsequent Report of Water Shut-off
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair
Notice of Intention to Shoot, Acidize, or Cement	XX	Subsequent Report of Abandonment
Notice of Intention to Pull or Alter Casing	<u> </u>	Supplementary Well History
Notice of Intention to Abandon Well	1	Report of Fracturing

1	Notice of Intention to Pull of Alter Casin	<u> </u>	Supplemen	tary Well Histo	ry	
- [Notice of Intention to Abandon Well		Report of	Fracturing		
_	(Indicate Above	by Check Mark Na	ture of Repo	rt, Notice, or O	ther Data)	
				A	ril 21	19 71
			(10000	1		10
llow	ing is a $\begin{cases} notice of intention to do w$	ork on land	leased	described as	follows:	
	·			LEASE	Rest Popler	halt Bo. 15
	MONTANA	1	Loosevel (Ł	East Pop	lar Unit
•••••	(State)		(County)			(Field)
ali N	10	Section 11		7251	2512	MEM
•••	660 (m.	sec.)	668	ownship)	(Range)	(Meridian)
e w	ell is located	line and	-1980	ft. from	line of Sec	11
CA) TE ACCURATÉLY ON PLAT ON BA	***			** ,	
			2104		ON, AND SHOW L	EASE BOUNDARI
e el	evation of the derrick floor above the	sea level is		~,	•••••	
'A'D	CAREFULLY	DETAILS OF	PLAN OF	WORK	rg.	EAD CAREFULLY
_	te names of and expected depths to object		_	-		
	ng points, and all other important proposed					dicate induding jobs,
		DETAILS	of wor	τ		
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	To trest Heath Sand by a	cidiaing for	Gy end	correcton	,84% 17.55	٠,٠,٠
	•	•		Š	(60) B	1971
	Last Test - April 8, 197	1 51 1779 (895 W.C.	45 MED	6 BOPP ST. IT E C	EIVE: 8
			*`		Slave	COME. COM.
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_		- 6 - 6 - · · · ·	C	Muse	shy Oil Corpor	ation
рго	ved subject to conditions on reverse	or form	Comp	any		
te	APR 2 2 1971 ORIGINAL SIGNED BY:		Ву	ORIGINAL	L.SICNYP.RV.74	F
	J. R. Hug. Supervisor	•		Bletz	let Superinten	
<i>!</i>		itle	· Title		······································	·····
	Dignier Office Libert		Addre	., P.O. 1	los 547, Popla	r. Motana 59
	·		Mult		,A	V
С	OMMISSION USE ONLY				•	



NOTE:—Reports on this form to be submitted to the District Agent for Approval in Quadruplicate WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

(SUBMIT IN QUADRUPLICATE)

TO

THIS FORM BECOMES PERMIT WHEN STAM APPROVED BY AN ACOF THE COMMISSION.

OIL AND GAS CONSERVATION COMMISSIONUTVEY OF THE STATE OF MONTANA CELVED

SUNDRY NOTICES AND REPORT OF WELLS

Subsequent Report of Water Shut-off	
Subsequent Report of the Acidizing, Acidizing	XX
Subsequent Report of Altering Casing	
Subsequent Report of Redrilling or Repair	
Subsequent Report of Abandonment	
Supplementary Well History	
Report of Fracturing	
	Subsequent Report of Water Shut-off Subsequent Report of Altering Casing Subsequent Report of Redrilling or Repair Subsequent Report of Abandonment Supplementary Well History

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data) Following is a on land described as follows: report of work done Best Pepler Dair No. 15 Best Poplas UnitMONTANA (County) **251**E **T28**H HE E (Range) (Township) (Meridian) The well is located... line and line of Sec..... LOCATE ACCURATELY ON PLAT ON BACK OF THIS FORM THE WELL LOCATION, AND SHOW LEASE BOUNDARY The elevation of the derrick floor above the sea level is READ CAREFULLY DETAILS OF PLAN OF WORK (State names of and expected depths to objective sands; show size, weights, and lengths of proposed cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fra DETAILS OF WORK Heath Send perforations 4871-79' were ecidised with 500 gallons 15% regular ecid 4 mallogs of imhibitor and 2 mallogs equision breaker added. The soid was followed with 110 mallows WF-23 Treatolite (corresion and scale inhibitor) mixed with formation water. Overflushed chemical with 125 bblo. of formation fluid. Permetion broke at 1600 PSI at 2 MPL Mer. inj. rate 4 SPM. Hin. inj. rate 1-1/2 BPM

Average 3-1/2 BPH.

Production was increased from 6 80PD

Workover Petential:

Approved subject to conditions on reverse of form	Company		
Date	By District Superintendent		
By District Office Agent Title	Title		
	Auul 635		

COMMISSION USE ONLY API WELL NUMBER						
2 S	COUNTY	WELL				

LES

NOTE:-Reports on this form to be submitted to the District Agent for Approval in Quadruplicate

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL,

API WELL NUMBER

COUNTY

(SUBMIT IN QUADRUPLICATE)

OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA THE LINGS OR SHELBY

NOTICE THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair
Notice of Intention to Shoot, Acidize, or Cement	X	Subsequent Report of Abandonment
Notice of Intention to Pull or Alter Casing		Supplementary Well History
Notice of Intention to Abandon Well		Report of Fracturing
 		

(1)	Indicate Above by Check Mark Na	•	Other Data) March 15	
	•	•		19
owing is a notice of inte	ention to do work on land	leased described as	follows:	
	,		East Popler	Unit
> - O > 7 M A > 7 A		Bassawala	None Bool	are the da
MUNIANA (State)		(County)	Bust Fup!	Field)
1 No 15	MW NV Section 11 (m. sec.)	Z8N (Township)	SIR (Range)	MPM (Meridian)
	ft. from $\begin{cases} \frac{N}{N} \end{cases}$ line and			
	PLAT ON BACK OF THIS FO	•		
				ASE BOUNDAR
elevation of the derrick f	loor above the sea level is	ZLUM (i.L.	•••••	
AD CAREFULLY	DETAILS OF	PLAN OF WORK	10	AD CAREFULL
	depths to objective sands; show s			
	portant proposed work, particularly			icate madding job
	DETAILS	OF WORK		
		SULT	•	
Pear Doctor Hade	No. 15 is producing fro	un sha Bassh Gand :	with margaretic	ማመ ለየ
	st Test: 191 EFFD 10			
4091-4099 1 Euro	,, ,,, ,,, ,,, ,,,,,,,,,,,,,,,,,,,,,,,			
and 165 gallone of	No. 15 is to be acidized for some inhibitor and late to the formation. Well otion 20 BOPD.	10 gallons of cor	rosion inhibito	r to
proved subject to conditio	ins on reverse of form	Company	RY OIL CORPORAT	ION C. Erowy
teORIGINAL SIGNED S	Y 3	Dy	·····	
J. R. Hug, Supervisor			ict Superintend	ent
District Office Ag	gent Title	Title	Box 547, Popler	••••••

Porr. No. 2 GENERAL RULES 201, 202, 213, 216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)

THIS JORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

OIL AND GAS CONSERVATION COMMISSION GAS CONS. COMMISSION OF THE STATE OF MONTANA STATE OF MONTANA STATE OF MANT

BILLINGS OR SHELBY

SUNDRY NOTICES AND REPORT OF WELL'S

Notice of Intention to Drill	Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans	Subsequent Report of Shooting, Acidizing, Cementing	X
Notice of Intention to Test Water Shut-off	Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well	Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement	Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing	Supplementary Well History	
Notice of Intention to Abandon Well	Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

			Apri	1 20 , 19 72
Following is a report of work	done on land	leased described as for LEASE	ollows: Last Poples (nic
MONTANA (State)	Be	County)		plar Unit
Well No. 15	IN IN Section 11	(Township)	2512	1574
The well is located 1980				(Meridian)
LOCATE ACCURATELY ON P	LAT ON BACK OF THIS FOR	M THE WELL LOCATION	N, AND SHOW LI	
READ CAREFULLY				
(State names of and expected of	depths to objective sands; show size ortant proposed work, particularly as		proposed casings; in-	EAD CAREFULLY dicate mudding jobs,

DETAILS OF WORK RESULT

·	
Approved subject to conditions on reverse of form APR 2 5 1972 Date ORIGINAL SIGNED SY: B. J. R. Hug, Supervisor	Company OIL CORPORATION By OPIGINAL SIGNED BY W. G. BEOWN Title Bistrict Superintendent
District Office Agent Title	Address P.O. Box 147, Pepler, Mestens 592

API WELL NUMBER STATE

NOTE:-Reports on this form to be submitted to the District Agent for Approval in Quadruplica WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

Acidized the Heath Sand formation 4891-4893' with 500 gallons 15% acid (with inhibitor and non-emulsifier) plus 110 gallons 990 and 165 gallons 957 VISCO corrosion and scale inhibitor down the annulus as follows.

Pressured tubing to 600 PST with down hole pump. Injected 110 gallons 990 VTSCO (corrosion inhibitor) mixed with 10 bbls. Heath crude down annulus followed by 77 bbls. salt water.

Injected 500 gallons 15% acid down annulus followed by 165 gallons 957 (scale inhibitor) mixed with 110 bbls. salt water. Displaced treated water with 127 bbls. formation fluid (77 bbls. casing volume plus 50 bbls. over displacement). Shut in 24 hrs.

 Hax. Inj. Pressure
 1400 PSI

 Max. Inj. Rate
 1-½ BPN

 15 Min. S.I.
 200 PSI

 2 Hr. S.I.
 Casing on Vacuum

Note: Caught pressure with 77 bbls, in tubing. Pressure decreased to 50 PSI while filling annulus, due to temperature of fluid being pumped. Tubing pressure increased to 1400 PSI and remained the same while displacing.

Well potentialed at 266 BFPD 13 BOPD 253 BWPD 95% W.C. 4-9-72

٠,	ATE, b		SS			
•	DEPAR	UNITED STAT TMENT OF THE GEOLOGICAL SI	INTERIOR	SUBMIT IN TRIPLICAT. (Other instructions on verse side)	re Bauget	Bureau No. 42-R142
		DTICES AND RE			G. IF INDIAN, ALL	OTTEE OR TRIBE NAME
OIL CAS WELL WE	LL CINEB		· · · · · · · · · · · · · · · · · · ·	11 4-	7. UNIT AGREEMEN Bast Por 8. FARM OR LEASI	olar Unit
Murphy Oil Co					Rast Por	lar Unit
See also space 17 At surface	L (Report location below.)	n clearly and in accordan	المستنبطة المستنبطة		11. SEC., T., R., M. SURVEY OR	lar Unit
14. PERMIT NO.		15. ELEVATIONS (Sho	,	R. etc.)	12. COUNTY OB PA	
10.	Chack	Appropriate Roy To	2106: Indicate Natur	of Notice, Report, or	Roosevel Other Data	t Montan
TEST WATER SHI FRACTUBE TREAT SHOOT OR ACIDIZ REPAIR WELL	NOTICE OF INT	• • • • • • • • • • • • • • • • • • • •		WATER SHUT-OFF BRACTURE TREATMENT SHOOTING OR ACCIDIZING (Other) (NOTE: Report result	EQUENT REPORT OF:	ING WELL NG CABING NMENT*
Bast Poplar U 5 BOPD 233 B level shows 2 set at 4992' 1969 showing	mit No. 15 WPD 98% B 00' of flu leaving th 319 BFPD	is pumping fro S&W (May, 1977 id over the pum e B-1 & 2 perfo 19 BOPD 230 M	m the Heat test) whi p. A WASP trations op PD 94% BS	h formation at the his uneconomic bridge plug and en. The last B.	he rate of 23 al. The pump l sack of ce Zone test was jobs and inhi	8 RFPD ing fluid ment was May, bitor
	failing.	It is proposed		e the Heath form		
÷						· ·
				·		
18. I hereby certify th	bat the foregoing	is true and wrestinus	ý			
SIGNED ORIG	INAL SIGNED	12 Prochaig Gire 1919	TLE Dist	cict Superintende	ent date J	ıly 24, 1972
(This space for F) APPROVED BY CONDITIONS OF		TI	TLE	* -	DATE!	: 26 1972

UN D STATES DEPARTMENT OF THE IN	SUBMIT IN T (Other instruction verse side)	tions re-	Form approved. Budget Bureau 1 LEASE DESIGNATION AND	
GEOLOGICAL SURVI	EY			
SUNDRY NOTICES AND REPOR		•	IF INDIAN, ALLOTTED OR	TRIBE NAME
(Do not use this form for proposals to drill or to deepen or Use "APPLICATION FOR PERMIT—" for	such proposals.)	Uvey]	Fort Peck	·
OIL GAS	· · · · · · · · · · · · · · · · · · ·	7.	UNIT AGREEMENT NAME	₹ ₩0
WELL WELL OTHER NAME OF OPERATOR	- 1111 Dei ter-		East Poplar C	<u>nit</u>
			FARM OR LEASE NAME	
ADDRESS OF OPERATOR	*	9.	WELL NO.	mit
0. Box 547, Poplar, Montana 59255	Million, Worden	<u> </u>	No. 15	
LOCATION OF WELL (Report location clearly and in accordance wi See also space 17 below.)	ith any State requirements.*	10.	FIELD AND POOL, OR W	ILDCAT
At surface			Rest Poplar I	hit
•		11.	SEC., T., R., M., OR BLK. SURVEY OR AREA	AND
0' from the North line and 660' from the	he West line		NW NW Section	11,
PERMIT NO 15. ELEVATIONS (Show who	ather an on on the h		T28N R51E	:
		^ 12.	COUNTY OF PARISH 1	S. STATE
	<u> </u>	I	Roosevalt	Monter
Check Appropriate Box To India	cate Nature of Notice, I	Report, or Othe	r Data	•
NOTICE OF INTENTION TO:	1	SUBSEQUENT	REPORT OF:	, -
STEST WATER SHUT-OFF PULL OR ALTER CASING	WATER SHUT-		REPAIRING WEL	L
FRACTURE TREAT MULTIPLE COMPLETE	FRACTURE TRE		ALTERING CASIS	·
SHOOT OR ACIDIZE ABANDON*	SHOOTING OR	ACIDIZING	ABANDON MENT®	-
REPAIR WELL CHANGE PLANS	(Other)			
(Other) Sqz & Reperf.	(NOTE:	Report results of n on or Recompletion	nultiple completion on Report and Log form.)	Well
DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all proposed work. If well is directionally drilled, give subsurfa	ce locations and measured at	d true vertical de	pths for all markers ar	d zones per
hent to this work.)				
nent to this work.)				
st Poplar Unit No. 15 is pumping from	the Heath formati	on at the r	ate of 238 BFF	70
set Poplar Unit No. 15 is pumping from (BOPD 233 EWPD 98% DS&W (May, 1972 to vel shows 200' of fluid over the pump. It at 4992' leaving the B-1 & 2 perform 69 showing 319 EFFD 19 EOPD 300 EWPD (weezes (scale and corrosion) have been to least two failing. It is proposed to 1 & 2 Zones and pump test.	the Heath formatiest) which is une A WASP bridge p tions open. The 94% BS&W. Thre tried on the Hea	on at the recommical. lug and 1 select B-Zone a scid jobs th to incre	The pumping in ack of cement test was May, and inhibitor ase production	luid was
st Poplar Unit No. 15 is pumping from BOPD 233 EWPD 987 BS&W (May, 1972 to vel shows 200' of fluid over the pump. t at 4992' leaving the B-1 & 2 perform 69 showing 319 BFPD 19 BOPD 300 EWPD users (scale and corrosion) have been a least two failing. It is proposed to	the Heath formatiest) which is une A WASP bridge p tions open. The 94% BS&W. Thre tried on the Hea	on at the recommical. lug and 1 select B-Zone a scid jobs th to incre	The pumping in ack of cement test was May, and inhibitor ase production	luid vas
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st Poplar Unit No. 15 is pumping from BOPD 233 EWPD 98% DS&W (May, 1972 to vel shows 200' of fluid over the pump. It at 4992' leaving the B-1 & 2 perform 69 showing 319 EFFD 19 BOPD 300 EWPD usexes (scale and corrosion) have been as least two failing. It is proposed to	the Heath formaticet) which is une A WASP bridge ptions open. The 94% BS&W. Thretried on the Heat squeeze the Heat	on at the recommical. lug and 1 select B-Zone a scid jobs th to incre	The pumping in ack of cement test was May, and inhibitor ase production	luid was
st Poplar Unit No. 15 is pumping from BOPD 233 EWPD 98% DS&W (May, 1972 to vel shows 200' of fluid over the pump. It at 4992' leaving the B-1 & 2 perform 69 showing 319 EFFD 19 BOPD 300 EWPD usexes (scale and corrosion) have been as least two failing. It is proposed to	the Heath formatiest) which is une A WASP bridge p tions open. The 94% BS&W. Thre tried on the Hea	on at the recommical. lug and 1 select B-Zone a scid jobs th to incre	The pumping in ack of cement test was May, and inhibitor ase production	luid was
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st Poplar Unit No. 15 is pumping from BOPD 233 EWPD 98% DS&W (May, 1972 to vel shows 200' of fluid over the pump. t at 4992' leaving the B-1 & 2 perform 69 showing 319 EFFD 19 BOPD 300 EMPD usexes (scale and corrosion) have been a least two failing. It is proposed to	the Heath formaticet) which is une A WASP bridge ptions open. The 94% BS&W. Thretried on the Heato squeeze the Heat	on at the recommical. lug and 1 s last B-Zone a cid jobs th to incre th formation	The pumping in ack of cement test was May, and inhibitor ase production	Iluid Was with the

(SUBMIT IN QUADRUPLICATE)

NOTICE THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

OIL AND GAS CONSERVATION COMMISSION 1972 6

OF THE STATE OF MONTAGO STATE OF MENT.

STATE OF MENT.

BILLINGS OR SHELBY

BILLINGS OF SHELBY

SUNDRY NOTICES AND REPORT OF WELLS

STATE OF MENT

·	0.08.5
Notice of Intention-to Drill	Subsequent Report of Water Shut-off
Notice of Intention to Change Plans	Subsequent Report of Shooting, Acidizing, Cementing
Notice of Intention to Test Water Shut-off	Subsequent Report of Altering Casing
Notice of Intention to Redrill or Repair Well	Subsequent Report of Redrilling or Repair
Notice of Intention to Shoot, Acidize, or Cement	Subsequent Report of Abandonment
Notice of Intention to Pull or Alter Casing	Supplementary Well History
Notice of Intention to Abandon Well	Report of Fracturing
Reinter the B-1 & 2 Zones XX	
(Indicate Above by Check Mark	Nature of Report, Notice or Other Data)

	Notice of Intention to Pull or Alter Casing		Suppleme	ntary Well Hist	ory	
2	Notice of Intention to Abandon Well		Report o	Fracturing		
٠	Reinter the B-1 & 2 Zones	XX		··		
•	(Indicate Above by Check	k Mark Na	ture of Rep	ort, Notice, or		
					July 24	, 19. 72
Follo	wing is a inotice of intention to do work	on land	leased	described as	follows:	
				LEASE	East Poplar	Unit
	MONTANA	1	locseve)	Ł	East 1	Poplar Dait
	(State)		(County)			ield)
Well	No	lon 11	***************************************	T28H	P51E	ion.
The	well is located	line and	660	ft. from	line of Sec	11
	ATE ACCURATELY ON PLAT ON BACK OF					
	elevation of the derrick floor above the sea lev					
Ine	elevation of the defrick floor above the sea lev	vei 15			*********	
REA	D CAREFULLY DETA	ILS OF	PLAN OF	WORK	RE	AD CAREFULLY
	State names of and expected depths to objective san					icate mudding jobs,
ceme	nting points, and all other important proposed work, p	particularly	all details i	esults Shooting,	Acidizing, Fracturing.)	
			OF WOR	K		
	•		SULT			
	Popler Unit No. 15 is pumping fro					
	PD 233 ENPD 98% RSAN (My, 197)					
	ol shows 200' of fluid over the pu					
	at 4992' leaving the B-1 & 2 perfe					
	showing 319 BFFP 19 BOFP 300 M cases (scale and corrocion) have be					
	lest two failing. It is proposed					
	4 2 Zones and pump test.	co squ	mand cont	meen tor	mermer and rock	544 CES
J	a s women and hank conce				•	
					•	
App	roved subject to conditions on reverse of for	m	Com	pany	HY OIL CORPORAT	ION
	IIII o = 1076		_			
Date	ORIGINAL SIGNED BY		Ву	•••••		······································
Ву	Judson D. Sweet, Petrolaum Engineer		Title	Distri	et Superintende	DE
-	District Office Agent Title					

	 	 SE ON					
2 5	1		ı	1	1	-	

NOTE:--Reports on this form to be submitted to the District Agent for Approval in Quadruplicate

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

Form No. 2 GENERAL RULES 201, 202, 213, 216, 219, 233.1 (SUBMIT IN QUADRUPLICATE)

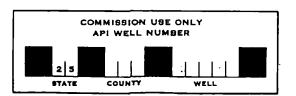
NOTICE THE FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

OIL AND GAS CONSERVATION COMPISSION MONT OF THE STATE OF MONTANA BILLINGS OR SHELBY

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill	Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans	Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off	Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well	Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement	Subsequent Report of Abandonment .	
Notice of Intention to Pull or Alter Casing	Supplementary Well History	1
Notice of Intention to Abandon Well	. Report of Fracturing	
	Reinter the 2-1 & 1 Lones	IX

·	<u> </u>	MENTER FIRE \$-2	2 2 202000	
(Indicate Above b	y Check Mark Nature	of Report, Notice, or Ot	her Data)	
			Septe	mber 8 1972
Following is a	on land	described as	•	
report of work done) lea	ased 1	lest Poplar In	4.
		.	_	
MONTANA (State)	········ ····	esevelt unty)		eplar Bait
(State)	(00		(1	Field)
Well No. 15 Sestion (m. s	11	(Township)	(Range)	(Meridian)
The well is locatedft. from				
LOCATE ACCURATELY ON PLAT ON BAC		•	** 1	
			, 5110 17 22	TOL BOOKBING
The elevation of the derrick floor above the	sea level is	Wells		
READ CAREFULLY	DETAILS OF PLAN			CAD CAREFULLY
(State names of and expected depths to object cementing points, and all other important proposed	tive sands; show size, w work, particularly all de	veights, and lengths of etails results Shooting, A	proposed casings; inc cidizing, Fracturing.)	licate mudding jobs
·	DETAILS OF RESUL	··· •		
Squeezed the Beath Sand perform squeezed at 3500 PSI with 8-1/2 Tagged hard commit at 4718'	t bbis. in form brilled out 1815 out. Drilled w stions at 5435-4	ition. Left 3-1	/2 bble. in ca esture tested est and WASP b	•
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ORIGINAL SIGNED BY	·	Ву		***************************************



By Judson D. Sweet, Petroleum Engineer District Office Agent

NOTE:-Reports on this form to be submitted to the District Agent for Approval in Quadruplicate

Address F.G. Ben SA7, Poplar, Montena

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

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DATE September 9, 1972

SIGNED ORIGINAL SIGNED BY W. C. BROWFITLE District Superintendent

18. I hereby certify that the foregoing is true and correct

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9	2/0	10# 1 C C	nii.	0		re its size:	5788	POG HOMOS IN	s range in the cash es been dynamiced g aterial used, position	के अकर अवस्थित स्टाइस्	or crains and
כ	34	s of the	e great	est imi	SOLUTION	то паче а	uriplete	history of the wel	Please state in de	oil the dat s of re-	filling, ingether
						HE	TOICE	OF OIL OR	TAB WELL		
		======				a noncember de	<u> </u>			2) - 5'001	or of the second
						MUDE	DING A	ND CEMENT	ING RECORD		
	Size casing	Wh	ere set	1	Numbe	r sacks of cer	nent	Method used	Mud gravity	Amount of	mud used
		 		-					_	- 	
13	3/8	142			<u>.</u>	,		By Hand			*************
#5 78	21 -	962. 300.			<u>40</u> 1	J		Pump & Plug Pump & Plug			
Σ	<u></u>							Tubia Tag			***************************************
_						•	PLUC	S AND ADA	PTERS		
FOLD	Heavi	ng plu	g—M	ateria	.l			Length		Depth set	
ii,	Adapt		•				· · · · · · · · · · · · · · · · · · ·	Size			
	T						SHO	OOTING REC	ORD		
		- इच्च्य		28			ਤ.	77 ATA			

CENERAL W. LINEUS)

<u>-51</u>_.

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned	oue F.
		Jet	J. S. D. P.	2-16	5636-5644		*
					5654-5664		
			1 1				
	1		TOOLS U	SED			
Rotary tool	s were used fro	mof			, and from	feet to	f
	F)	1		, and from		
ORDIO IOOIS	W d d d d d d d d d d d d d d d d d d d	,	DATES		, ши пош 1		
		10	1		ducing -		10
	5			to to bro	ducingFebruar	y 21,	-, 135
The pro	oduction for th	e firs 24 hours w	is 623	arrels of	fluid of which 100	% was oil;	
emulsion;	% water; a	nd % sedim	ent: 🖟 🚉	'A ' 3	∴ Gravity, ⁶ Bé.	, ,	
If gas v	vell. cu. ft. per	24 hours	Gal	lons gaso	line per 1,000 cu.	ft. of gas	
	· (! -	$-2e^{i\omega t}$, $t\in \mathbb{R}$, $t\in \mathbb{R}$	arte e est ann ar	المناج الأساء			. , ' 1)
коск р	ressure, ibs. pe	r sq. in.			o vidi directing		
Dat.		Drill	EMPLOY	EES	eren Tagan sagar an anti-		ווייים ל
	Martin	The second second		reg unanin. , ma	R. J. Masse	y	-, DIII.
	Morris	, Drill	er -	:	- 1		., Dril
<u> </u>		FO	RMATION I	RECORI)	··	
FROM-	то	TOTAL F	eet :	4.5 ·*3	FORMATIO	٧	
							
	•	FORM	TION TOPS	• • •	- 10 m	,	
		-	11.5	ija ija Eggar	e de la companya de La companya de la co		
gle	1150			Cyp Spi	rings lilio		
obrara :	D			Spearfi			*
rlisle : eenhorn	2352			Amsden			
aneros,		1.		Heath.			
Muddy	2700			Otter			:
ddy	2923			Ko bbey Charles			
kota Silt	3		L L	L. Zone	יברסו		
rrison	3473		· 1 · · ·	3~1 Zon			
ift	3557	1		3-2 Zon	ie 5651		
erdon ·	3915		"(Zone	5808		
per Sh.	4270			** · ·			- "
per Ls.	4343		1,	•	• •	•	
			1				
	1	•		-			
	*.,		152			•	
	1				•		•
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		1	1		_ ,		
		<u> </u>		•	The second secon	.,	
233632		1 3 O. 71' EX	<u>-</u>		4.08315 1.004		

(OVER) POTALLITICAL RECOURT - Constituest

REEDELLS BET AND TOTOORECORD

Bit No.	Make	Type	Size	Serial No.	From	<u>To</u>	Totos Footaga	Degrees
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	Hughes II II II II II II II II II	OSCJJ OSCJ OSCJ ONVJ U	12 1/4" 8 3/4" " " " " " " " " " " " " " " " " " "	60563 78329 65234 18904 18901 3444 3426 3710 3431 3445 3709 5539 3711 3428	979 2477 2930 3159 3328 3530 4000 4282 4464 4677 49935 4935	979 2477 2930 3159 3530 3530 4000 4282 4464 4935 4935 5086	6½ 630 2205 4677	1/4° 1/4° 1/4°
16 17 18 19	13 13 13	OWN J n OWS n	89 89 88	3425 25080 65235 83347	5086 5245 5 520 5 660	5245 5480 5560 5780		

CORE BIT RECORD

Core No.	Make	Size	Serial No.	Fron	To	Footage
Core No. 1	Christensen	7 7/87	#j=1845	4911	4918	7
Core No. 2	Christensea	7 7/8"	#j=1846	5480	5500	20
Core No. 3	Christausen	7 7/3"	#j=1846	5500	5512	12 ·
Core No. L	Christensen	7 7/8ª	#j-1846	551 2	5520	8
Core No. 5	Christensen	7 7/8°	#j-18 L 6	5624	5660	3 6
Core No. 6	Christensen	7 7/8"	#j-18L6	5780	5815	_35
Total Footage	:					118

ELECTRO LOG DATA

TYPE OF LOG	INTERVAL LOGGED
Schlumberger Electric Log: 2" Electrical Survey 5" Electrical Survey 5" Microlog	133'-5816' 2000'-5816' 2000'-5813' 5100'-5813'

LOG TOPS

	Depth	Datum	Thickness
Judith River	772	+13144	
Eagle	1150	+ 966	
Niobrara	1990	+ 126	•
Carlisle	2155	- 39	
Greenhorn	2352,	- 236	•
Graneros	2552	- 436	
U. Muddy	2700	- 584	
Middy	2923	- 807	
Dakota Silt	3138	-1022	
Morrison	3473	-1357	
Saift	· 3557	-1 <u>1111</u>	
Rierdon	3915	- 1799	
Piper Sh.	14270	-2154	
Piper Ls.	4270	~2227	
Gypsum Sprgs.	7700	-2284	
Spearfish	14587	-2471	
Amsden	4698	-2582	
Heath	4823	-2707	
		-2874	
Otter	14990		
Kibbey	5122	- 3006 .	
Kibbey Ls	5286	-3170	
Madison	537	~ 3258	٠ ٠
A-1	5472	-3356	51
A-2	5485	- 3369	7,
A-3	5504	- 3388	161
A-L	5522	- 3406	151
B-1	5636	-3520	89
B - 2	5654	-3538	161
B~3	5675	- 3559	? *
B-4	5710	-3594	61
B-5	5748	-3632	? ? ?
C-1	5790	-3674	?
C-2	5808	- 3692	?

CORE DESCRIPTIONS

:912-k918

Core No. 1.

පිස්සු දුරු

- C. T. 73, 86, 78, 75, 72/53, 65
- 2.6" Shale, dark brownish-red, slightly mottled with gray; sub-waxy.
 - 6n Siltstone, very light greenish-gray, slightly argillsceous, tight. No Show.

Core No. 2

5480-5500

Rec. 20º

- C. T. 36, 28,11, 21, 28/29, 20, 12, 5, 9/14, 15, 12, 20, 23/18, 20, 17, 25, 24/
- * 20 Limestone, dark brownish-gray, pseudo-colitic with shreaks of medium crystalline, medium hard, good vuggy porosity with vugs ranging in size from 1/8" to 1/4"; some vugs seem to be connected; faint oil odor on fresh break, good, bright milky fluorescence; no taste; some free oil blesding from vugs.
- Idmostone, dark brownish-gray, amorphous to microerystalline, medium hard, numerous fairly short, irregular fractures well cemented with calcite; occasional he streak of fair vuggy porosity with vugs averaging about 1/8"; faint oil odor on fresh break; bright milky fluorescence; no taste.
- Limestone, very light gray, very argillaceous, medium soft, earthy; occasional very thin, tight, hairling fractures; occasional very small inclusions of clear calcife; entire unit looks wat. No Show.
 - J' Limestone, same as above unit with numerous 1" to 2" streaks of light gray, fine crystalline anhydrite; anhydrite streaks are dipping at an angle of approximately 20°; numerous thin shale partings having slickenside development. No Show.
 - 2.64 Polonite, light gray, madium hard, amorphous, occasional fairly large inclusions of light gray, amydrite; numerous very thin, black shale parkings having alickenside development.
 - 2" Anhydrite, light gray, very fine crystalline, medium soft; numerous very thin strecks of light gray, dolonite with an apparent dip of approximately 30; occasional small fragment of light gray anhye drite in a matrix of medium gray dolonite. No Show.
 - Dolomite and enhydrite; light gray enhydrite and medium gray dolomite; anhydrite occurs as small engular fragments separated by fine crystalline dolomite; anhydrite fragments are so arranged as to give appearance of a flow structure; anhydrite seems to be primary and dolomite secondary.

CORE DESCRIPTIONS

Core No. 2 continued: 51,80-5500 Rec. 204

300 Amigrative, medium gray, with strocks of hight gray, films to medium crystalline, redium coft, danse. No Show.

Note: * - Analyzed by Chemical & Geological Laboratories -- Full dismeter.

Cora No. 3

5500-5512

Rec. 11º

- C. T. 26, 19, 17, 20, 15/22, 21, 32, 28, 60/55, 65
- 5° Anhydrite, medium gray, fine to medium crystalline, medium soft, dense; numerous paper-thin black, calcareous shale partings. No Show.
- * 6° Limestone, dark brownish-gray, amorphous, medium hard, dense, except for numerous very short, tight, irregular fractures; faint oil odor along fracture planes, fairly even, bright, golden-yellow fluorescomes along fractures planes. All fractures are very tight.

 All show is along fracture planes.

Note: * - Analyzed by Chamical & Gralogical Laboratories.

Core No. b

5512-5520

Rac. 80

- C. T. 43, 40, 32, 32, 23/ 27, 30, 28
- limestone, dark gray, medium hard, amorphous, dense, except for fairly numerous short, tight, irregular fractures, fair oil odor and teste along fracture planes; even, bright, golden-yallow fluorescence along some fracture planes; entire unit very tight. All show along fracture planes.

Core No. 5

5624-5650

Rec. 35°

- C. T. 27, 30, 26, 20, 21/21, 18, 16, 17, 16/12, 7, 7, 17, 22/12, 9, 8, 15, 19/23, 20, 23, 20, 30/40, 35, 60, 100, 65/21, 19, 18, 16/18
- 10.66 Anhydrite, light gray, fine crystalline, medium soft, dense, except for numerous fairly large vugs in upper 2 feet caused by solution of salt. No Show.
 - 2' Limestone, dark brownich-gray, medium crystalline with occasional coarse crystals of brown calcive, slightly porous and permeable; fair oil odor on fresh brook, good even dull golden-yellow fluorescence.
- 2º Limestone, dark brownish-grzy, medium hard, amorphous, fairly dense, except for numerous short, fairly tight, irregular fractures; occasional small 1/8" vugs, very slightly permeable; fair oil odor along fracture planes, spotted, bright, milky fluorescence along fractures.

CURE DESCRIPTIONS

Come No. 5 continued: 5520=5550 Rec. 361

- he limestone, but which grays making saving fine to medium crystalline, fally porosity and permanishing your will odor on fresh break, good, even, dull, golden-youlker formed and you some free oil bleeding from occasional small value-points to as
- 9.6" Anhydrite, light gray, mcdirm soft, filme crystalline, dense; mumerous very thin, irregular, black calcité shale partings. No Show.
- limestone, dark brownish-gray, fine to medium crystalline, medium soft, fair porosity and permeability; good oil odor and even, dull golden-yellow fluorescence on fresh break; occasional small pin-point vug bleeding free oil; occasional thin 2" streak having no intercrystalline porosity, but having short, vertical fractures extending throughout unit; occasional 1" to 2" fracture, which is fairly well developed, but cemented with calcite.

Core No. 6

5780-5815

Rec. 35

- C. T. 50, 35, 35, 30, 30/ 25, 35, 25, 35, 35/ 30, 38, 32, 26, 32/ 18, 26, 21, 20, 18/ 17, 15, 12, 20, 13/ 15; 13, 14, 12, 12, 13, 12, 8, 9, 7
- limestone, brownish-gray, medium crystalline with numerous fairly large crystals of brown calcite, medium hard, dense, except for single, tight, vertical freeline commuted with calcite. No Show.
- limestone, dark gray, savarphore, modine hard, very argillaceous, dense. No Show.
- 1.6" Limestone, madium grey, first crystalline, very hard, dense.
- Limestone, brownish-gray, emorphous to micromystalline, medium hard, dense, except for fairly numerous thin streaks of very slightly porous, medium gray, fine crystalline dolomite. No Show.
- Limestone, brownish-gray, fine crystalline, very hard, dense; cocasional very tight, thin, vertical fracture comented with calcite; cocasional fairly large inclusion of brown calcite. No Show,
- Bolowite, medium gray, fine to microcrystalline, vary hard, very slightly porous; numerous thin streaks of brownish-gray, crystalline limestone; occasional fairly large calcute inclusions. No Show.
- 69 Limestone, brownish-gray, very fine crystalline, very hard, dense, except for occasional thin, very tight, vertical fracture camented with calcite; black stylolite at very base of unit. No Show.
- 50 Limestone, brownish-gray, very fine crystalline, very hard, fairly numerous, tight, vertical fractures well committed with light gray calcite; fractures in lower 20 of unit are broken open with calcite on fracture planes, no show along fractures, or in mass of unit.

- directors, dark brounders, need to our willing, medium hard, very slightly porces, question in the blas fair oil clor and speckled golden wellow fluctures. I single, fairly tight, vertical fracture extending about 2% into and from above 5° unit; entire unit very tight with no oil blassing from core.
- 2' Linestone, light brownish-grey, fine crystalline, very hard, dense, very faint oil odor on fresh break, no fluorescence; otherwise no show.
- Idensione, brownish-gray, fine crystalline, modium hard, very slightly porcus, questionably permeable; fair oil odor on fresh break; good, dull, even golden-yellow fluorescence; single short, tight, vertical fracture running length of unit; entire unit has very slight porosity except for single vertical fracture which may be tight.

DRILL STEM TESTS

- DST #1, (re-run), LEST-LESOL, straddle packers, 5/8" bottom choke, no water cushion; tool open 1 hour, shut-in 20 minutes. Tool opened with good blow for 20 minutes, increasing to a strong blow for LO minutes. Gas 3130' from surface. Recovered: 390' clean, black, 39.6° gravity oil, 180' oil and gas out mid, LAS' middy state water with show of oil and gas. Chlorides 23,000 ppm. IBHFP: 60# FEHEP: 505# BUNIE: 2275% Fydro: 2705#.
- DST #2, (re-run), Halliburton Tool, 5503-5520, 1/2" bottom choke, no mater cushion; tool open h hours, with weak blow throughout test; shut-in 20 minutes.

 Gas 5263° from surface. Recovered: 15° clean, free oil, 75° oil and gas cut mud. TBHFF: 55#

 EMETE: 655% Hydro: 3000%.

CORE ANALYSIS REPORTS

Mill Diameter Corsetudy: Operator MURPHY CORPORATION Field East Poplar Formation A-1 Zone East Poplar Unit #15 Location C NW NW 11-28N-51E 5480-5500 Well No. Depths 210h Gr. - 2116 KB Feb. 5, 1953 Elevation Bato Laboratory No. 18

Sample No.	Representative Of Feet	Footage	t	ability Vertical	Porosity Percent		nsity Metrix	% Po	Hater Hater Hater	
	Core No. 2	5480- 5500	Recov	ered 20 foe	t					
l (Descr	5480.0-5481.0 ription: C, V, I, St	3.0)	422	2,9	10.5	2.34	2.61	2.9	34.3	
2 (Descr	5481.0-5482.0 ription: C, SV, I,St	1.0)	82	6.2	10.7	2.44	2.73	5.7	50.5	
3 (Descr	5462.0~5483.0 ription: C SV, I,St)	1.0	7.01	1.9	կ. 2	2.55	2.66	7,4	76,2	
lı (Descr	5183.0-5181.0 ription: C, SV,I,St)	1.0	30	6.4	6.9	2.55	2.74	Tro	3843	
5 (Descr	5484.0-5485.0 ription: C, I)	1.0	1.04	0.5	6.1	2.57	2.73	0	23,0	
6 Descr	5485.0-5486.0 -ipticm: 0,1)	1.0	0.29	0.2	4.8	2.60	2.73	0	93.8	
7	5486.0-5487.0 5487.0-5500.0	1.0 13.0	0.51 Not rec	0.08 eived for a	13.1 malysi s.	2.28	2.62	0	19.8	

C = Cracked I - Intergranular

9

⁻ Vugs St - Stained

V - Vugo SV - Small Vugs

ふつひむ	AMAIVOTO	ひかることもに	Continued:
LATER.	ABBLIVSIS	F 2. P 1.2 (175)	

Operator	MURPIN CORPORAL	ZON			t Poplar	For	meti.on_	A-Zone	Madison
Well No.	East Poplar Uni	t #25		C Location 1	NW N u 1-28n-51e	Dep	ths	505-551]
Elevail on	2104 Gr 2116	KB		Date Fel	o. 7, 1953	Let_	. No. 1	.8	MARKOTT COMMENTS OF THE PROPERTY OF THE PROPER
Full Diamot	or Carestudy: Representative Of Feet	Footage	Perm Redial	cability Vertical	Porosity	Der Bulk	noi.ty Metrix		d Sometica ore Space Veter
8 Sim to 10 9 90 90 10 12	0779 No. 3 02050-550610 55060-5506.2 550608-5508.0 550800-5509.0 550000-5513.0	5505-5511 1.0 0.2 0.8 1.0 1.0	Recove 0.19 33 0.38 0.40 33 833	ered & fea% 2.7 28 0.82 0.5 28 7.4	1.3 3.8 3.3 3.0 3.0 5.0	2.68 2.70 2.68 2.66 2.63	2.71 2.75 2.71 2.76 2.77	Tr. Tr. O	%,2 3,6 17,0 0,0 5,0
10 11 15 16	Gore Ho. 4 5512.0-5514.0 5514.0-5515.5 5515.5-5518.0 5518.0-5520.0	5512-5520 2.0 1.5 2.5 2.0	Recove 0.33 0.07 • 12 0.63	3 2000 0.01 0.01 2.3 0.6	1.3 3.0 0.7 1.7	2.69 2.69 2.69 2.69	2.72 2.77 2.71 2.73	Tr. Tr. Tr.	13.1 10.0 85.7 24.7

.....

CORE ANALYSIS REPORTS continued:

Operator	MURPHY COMPONATION	_Field	East Poplar	Formation	B - Zone
Well No.	East Poplar Unit #15	Lccation	11-26N-51E	Depths	5624-5660
Elavation	21Gh Gr 2116 KB	Date	Feb. 9, 1953	Tup. No.	1.8

FULL DEAMETER COMESTUDY:

Sample No.	Representative Of Feet	Footage	Ferment Redial	illty Vertical	Porosity Per Cent	Dens Bulk	ity Matrix	Residual % Pore Oil	Sucaravior Space Wates	
			Yna destina esta esta esta esta esta esta esta est	······································		·			mad a amuse "Tärk, ässa t Esa huvaida äddir	
	Core No. 5	5621-566	O Recei	ved 17 fe	et					
	5624.0-5634.0	Not reco	Not recoived for analysis.							
17	5634.0-5635.0	1.0	O.35	0.12	6.7	2.59	2.78	7.2	S. 95	
19	563 5.0-5 636.0	1.0	5.52	3.6	16.2	2.27	2.71	5.5	1.7.4	
119	563 5. 0 <u>-</u> 5637 . 0	1.0	28	1.9	17.0	2.22	2.67	16.3	53 57	
20	5637.0-5638.0	1.00	13	L.L	9.4	2.46	2.72	2.2	3161	
3.7	5638,0-5639.0	1.0	36	5.0	5.5	2.55	2.70	Tr.	lw_{ij}	
55	5639.0-5610.0	1.0	1.9	Lels	6.8	2.47	2.65	14.4	LBS Block	
23	5540.0-5641.0	1.0	14	2.0	11.4	2.33	2.63	20.8	3500	
21/2	561,2.0-561,2.0	1.0	3.12	1.9	11.8	2.38	2.70	1.1.8	19.0	
25	5642.0=5643.0	1.0	1.17	0.68	9.6	2.48	2.74	15.5	其學。為	
_	5643.0-5652.0	9.0	Not rec	Not received for analysis.						
26	5652.0-5653.0	1.0	8.31.	5.0	16.1	2.25	2.69	2.5	350	
27	5653.0-5654.0	1.0	6.06	6.5	14.3	2.29	2.68	3.4	59.0	
2 6	5651:,0-5655.0	1.00	7.53	12	12.9	2.33	2.67	11.2	10.5	
53	5655°0-2626°0	1.0	1.57	1.5	1.0.2	2.42	2.69	2.0	Mod	
30	5556.0-5657.0	1.0	15	2.3	8.6	2.47	2,65	5.7	92.3	
31	5657.0-5658.0	30	5.48	1.8	9.8	2.41	2.66	Tr.	200	
32	5658.0-5659.0	1.0	8.61	1.4	8.4	2.46	2.69	Tr.	50.5	
33	5659.0-5660.0	1.0	1.77	1.5	9.3	2.42	2.60	2.9	78.3	

CORE ANALYSIS REPORTS continued:

Operator	MURPHY CURPORATION	Meld East Poplar	Formation C - Zong
Woll Ho.	Mast Poplar Unit #15	Location 11-28N-51E	Depths 5801-5815
	2104 Cr 2116 KB	Data Feb. 12, 195	

FULL DIAMETER CORESTUDY:

Sanyle No.	Representative Of Feet	Footage	Permea Radial	bility Vertical	Porosity Por Cent	Dens Bulk	nity Matrix		Saturation Space Water
34 35 36 37 Sim. to 37 38 39 40 41 42 43	Core No. 6 5801.0-5802.0 5802.0-5803.0 5803.0-5804.0 5304.0-5805.0 5306.0-5806.0 5306.0-5808.0 5308.0-5809.0 5809.0-5810.0 5811.0-5812.0 5812.0-5813.0	5801-5815 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Recov -0.01 -0.01 -0.01 -0.01 -0.01 -0.02 -0.01 0.05 0.02 -0.01 0.02	ered 14 fee -0.01 -0.01 50004 50004 50004 0.62 22.3 0.46 -0.01 -0.01 5.8	2.1 2.3 2.9 4.1 4.1 3.3 3.9 6.6 2.6 2.6 2.9	2.64 2.65 2.61 2.64 2.56 2.56 2.56 2.58 2.58 2.58	2.70 2.71 2.69 2.75 2.65 2.65 2.65 2.65 2.65	4.8 Tr. Tr. 0.0 2.2 55.5 17.7 17.0 17.7 28.0 3.1 48.3	78.6 91.3 50.7 11.7 69.0 39.4 74.4 79.0 63.1 60.0 8.6
145 Sim. to 45	5813.0-5814.0 5814.0-5815.0	1.0	0.05 0.05	2000 2000 2000	8.4 8.4	2.49 2.49	2.72 2.72	22.9 21.1	38.5 26.5

STAR HEREEFFERD

Total Depth: 5815' Driller equals 5817' Schlumberger.

Ran tubing with & 3/h" bit and Baker wall scraper. Tested 5½" casing with 1075%, held okay; top of sement at 5758 feet; float at 5762 feet; top of shoe at 5798 feet. No cement from 5802 to 5817 TD, (15 feet of open hole). Note: time to drill Baker fill-up-float collar and rubber plug was & hours and 51 minutes; baker fill-up shoe was 3 hours and 5 minutes). Ran Baker wire line junk basket on McCullough wire line to 5727 feet; could not get to bottom. Went in hole with bit and scraper to condition mud. Found mud heavy with cuttings of cement, rubber and float shoe material. Ran wire line junk basket to bottom, (5819° McCullough equals 5817° Schlumberger). Ferforated 565% to 5664 with 4 jet shots per foot; perforated 5636 to 5644 with 4 jet shots per foot; perforated 5636 to 5644 with 4 jet shots per foot; perforated 5636 to 5644 with 4 jet shots per foot. (Schlumberger measurements). Made two trips with wire line junk basket, and then ran Baker No. 35, 15.50%, Model "D" Production Facker on wire line, set at 5780 feet.

Ran 185 joints of 2 3/8", 4.70#, J-55, 8 rd. thd. range 2, American tubing and subs (5769.40"); landed 10.60 feet below RKB. spaced as follows:

Top joint tubing
1 Sub 6.09 ¹
184 joints tubing
distance below RKB10.60
Otis Side-door Choke
Baker Model "B" Latch-on Sub63"
m all the property of the control of
Top of Production Packer5780.009
2 Faker Seal Nipples 2.19
Baker Flush Joint
Perforation
Baker Seal Nipple
Flush Joint plugged 2.20°
,
Bottom of Tubing5805.95
-
Note: To pull tubing, pull 3000# to 400#, or
12-15 inches; turn 15 rounds to the

Displaced and with water and water with oil. Acidized "B" Zones at 5636 to 56h, feet and 565h to 56h with 1000 gallons regular 15% Dowell acid. Displaced acid with oil at rate of h barrels per minute, 2350% maximum pressure 2250% minimum pressure after pumping 1475%. Flowed acid tack in 2h minutes; started showing oil in 3h minutes. Cleaned to 25% acid water. Closed in and put on 1/h" choke. TFP: 250% TSIP: 600% EGAW: 2% CSIP: 900%.

right.

Acidized "C" Zone, 3500-9007, at a 2000 gellane, regular 15% Dowell acid. Formation broke at 1500%, then presence blod back to 11,00%. Displaced 3.5 barrels of acid per minute at the marketin pressure of 2800%; minimum pressure after pumping, 1600%. Flowed and back in 137 minutes. Flowed acid water 30 minutes showing little oil; made only 3 small heads in 8 hours, (muddy acid water with trace of oil). Swabbed well down to 2000 feet and smut-down for darkness. Began flowing small heads at 1:00 A.N., 1-4 minute heads, from 1-1/hour and 15 minutes between heads. Started swabbing at 6:30 A.M. and swabbed down to 5000 feet by 10:00 A.M.; swabbing 5 barrels of fluid per hour, and 20-30% water.

Stratafracid with 1000 gallons of gelled acid, followed with 2000 gallons of regular 15% Dowell acid; maximum pressure 3000#, minimum pressure 2200#. Displaced 5 barrels per minute at 2200#. Pressure after pumping 1400# Flowed acid to surface in 24 minutes; started showing oil in 45 minutes and 5% anid water in 60 minutes. Finished cleaning on 1/4" choke; flowed 45 minutes into pit, no show of BSAW. On a 1/4" choke, TFP: 1,50# CSIP: 800# TSIP: 900# Shut-in well and released rig at 6:00 P.M., 2-18-53.

222222222222222222 SUMMARY OF COMPLETION DATA

Casing: Ran 175 joints (5788.40) of 5% casing, set at 5500 feet; cemented with 250 sacks of regular cement.

Ran 185 joints (5769.40°) of 2 3/8° tubing Tubing: and subs; bottom of tubing at 5805.95%.

Baker Model "D" Production Packer set at Packers: 5780 feet.

Perforations: "B-1" Zone: Perforated interval 5635-5644. H/L jet s.p.f.

> "B-2" Zone: Perforated interval 5651,-5661, w/4 jet s.p.f.

Acid Treatment: "B" Zones: 1000 gallons of regular acid.

"C" Zone: 1000 gallons of regular acid. Stratafrac'd w/1000 gallens of gelled acid followed w/2000 gallons of regular acid.

"B" Zone floring through annulus. Type Completion: DUAL: "C" Zone flowing through bilding.

<mark>ಇತಿಬದಿ ಕ</mark>ಾರ್ಣದ ಪ್ರಕ್ಷಣದ ಪ್ರಕ್ಷಣದ ಪ್ರಕ್ಷಣದ ಪ್ರಕ್ಷಣಗಳ ಪ್ರಕ್ರಿಸಿದ ಪ್ರಕ್ಷಣದ ಪ್ರಕ್ಷಣದ ಪ್ರಕ್ಷಣದ ಪ್ರಕ್ಷಣದ ಪ್ರಕ್ಷಣದ ಪ್ರಕ್ಷಣದ ಪ್ರಕ್ರಣದ ಪ

PRODUCTION SEST DATA

EAST POPLAR UNIT WELL NO. 15

February 25, 1953

Tubing	Production	Test:	11 Ctt	Zona
X			-	****

Time	Choke	FP	BS&W	Water	<u>Oil</u>	Date of Test
2 hours	3/L ⁿ	52 <i>5#</i>	3.2	2.68	81.17	2-23-53
2 hours	12/64"	825#	ىلە	Neg.	55.43	2-23-53
2 hours	8/61:"	975#	ek.	Neg.	27.04	2-23-53

Casing Shut-in Pressure: 850# Tubing Shut-in Pressure: 1050#

TOTAL OIL ON SIX*HOUR TEST:

163.6ls

Czaina	Producti ca	Toot.	ngn	7000	
Carring	I LOUIGE OF CEL	rese:	D	4610	

Tima	Choke	FP	BS&W	Water	011	Data of Test
2 hours	1/4"	1,00#	.1	Neg.	71.71	2-24-53
2 hours	12/6կ"	625	.l	Neg.	50.03	2-24-5 3
2 hours	8/6L ⁿ	725#	.l	Neg.	<u>24.33</u>	2-24-53

Tubing Shut-in Pressure: 1050# Casing Shut-in Pressure: 850#

TOTAL OIL ON SIXMOUR TEST:

146.07

HUD PROGREM SUMMARY

Total Mid Additives Used: Controller, 209 sacks; Controller, 450 sacks; Quebracho, 31 sacks; Caustic Soda, 58 cans; Driscose, 7 sacks; Phosphates, 2 sacks.

> Cost of Additives: \$3790.25 Trucking Cost: 240.95

> Total Cost: \$3931.20

Drilled surface hole to 970 feet with water. Set 9 5/8" casing at 962 feet and cemented with 100 sacks of Dakota cement. Clean cement circulated to surface. Drilled cut from under surface pipe to approximately 2700 feet with water and then began building up a caustic scda-quebracho mud while drilling. Controlgel was added as necessary to control viscosity and small additions of Driscose were used to control water loss. At approximately 4300 feet approximately 800# of caustic soda and 400# of quebracho were added to increase the PH factor to 12, prior to drilling into the anhydrite section. This high PH was maintained with caustic soda to total depth. Controlber was added to off-set oil cutting mud at approximately 4900 feet.

had characteristics from 3700 feet to toxel depth were as follows:

Depth	Mud Weigh?	71.008197	Water Loss	РН
3700	10.7#/gal.	38 sec.	9.0 cc.	9 .5
liloo	10.5%/gal.	ట్≎ ≲ుండి.	5,6 ce.	10.5
4300	10.4#/gal.	35 sec.	6.0 cc.	1.0.8
4370	10.2#/gal.	37 sea.	6.0 cc.	12.8
სგიი	10.4#/gal.	50 sec.	6.0 cc.	10.5
4920	9.8#/gal.	45 sec.	10.0 cc.	12.0
4933	10.9#/gel.	μ8 sec.	6.0 cc.	12.0
5011	10.8#/gal.	55 sec.	6.0 cc.	12.0
5380	10.6#/gal.	48 se c.	9.4 cc.	11.5
5777	10.4#/gal.	53 sec.	19.3 cc.	11.8
5815	10.l:#/gal.	5 1 s ec。	14.0 cc.	12.0

Ran and set five and one-half inch casing at 5762 feet with 250 sacks of regular, 2% gel cement without difficulty.

SAMPLE DESCRIPTION

- 0 -2000 No Semples.
- 2000-2020 Shale, medium gray, fairly soft, very calcaraous with mumerous small, tan, chalky specks.
- 2020-2310 Shale, medium gray, medium soft, very slightly silty.
- 2310-2425 Shale, as above, with trace of very fine grained, slightly porous sandstone.
- 2425 Sample Top: Greenhorn.
- 2425-2490 Shale, dark gray, medium firm, very calcareous; numerous small tan, calcareous specks; trace of dense, brown, amorphous limestone.
- 2490-2620 Shale, medium gray, medium soft, fairly firm.
- 2620-2700 Shale, medium gray, medium hard, chunky; trace of light gray miltstone, trace of white bentonite.
- 2700-2820 Shale, medium to dark gray, firm, medium hard, chunky.
- 2820-2930 Shale, as above; some light gray, very fine grained sandstone and siltston.
- 2930 Sample Top: Muddy Sand.
- 2930-2980 Sandstone, medium gray, medium grained, calcareous, very porous; some medium gray, soft, slightly calcareous shale.
- 2980 Sample Top: Skull Creek.
- 2980-3100 Shale, dark gray, medium hard, firm, splintery; some bluish gray clay; trace of light gray siltstone.
- 3100-3190 Shale, dark gray, medium hard, splintery; some light gray, fine grained, culcareous sandstone.
- 3190 Sample Top: Dekota
- 3190-3340 Shale, dark gray, medium hard, splintery, streaks of light gray fine to medium grained, perous sandstone.
- 3340-3100 Sandstone, light gray to white, medium grained, well rounded, porous; some medium to dark gray shale.
- 3400-3495 Shale, brownish-gray, medium hard, firm, micaceous; trace of light gray, medium grained, porous sandstone.

3495 Sampla Top: Morrison.

310%-3665 Shale, dark gray, mading this file of Laly thinky.

3555 Sample Top: Swift.

3555-3640 Sandstone, light gray, medium grained, perous, very glaucomitic, sand grains, rounded to subrounded and well sorted; some firm, gray shale.

3640-3800 Shalo, medium brownish-gray, firm, chunky; some fine to medium grained light gray, glaucontic sandstone; trace of danse brown limestone at 3600 feet.

3800-3910 Shale, light gray, medium firm, slightly calcareous; some brownish gray, firm, non-clacareous shale.

3910 Sample top: Rierdon.

3910-3980 Sandstone, light gray, fine grained, calcareous, slightly porous; some light gray, calcareous shale.

3980-1030 Shale, medium to dark gray, slightly calcareous, chunky; trace of light gray, calcareous, fine grained sandstone.

h030-k105 Shale, light greenish-gray, slightly calcaracus, splintery; trace of pyrite.

1105-1265 Shale, as above, with some brownish-gray, dense, smorphous limescone.

1265 Sample Top: Piper Shale.

1265-1310 Shale, dark red, silty, medium soft; some dark gray, chunky shale; trace of soft white gypsum; trace of groom shale; trace of brown dense limestone; trace of light gray, very fine grained, calcareous sandstone.

4310 Sample Top: Piper Limestone.

4340-4390 Limestone, dark brown, emerphone, dense; trace of red, green and gray shale.

1390 Sample Top: Gypsum Springs.

4390-1450 Shale, light gray, medium firm, splintery, slightly calcareous; some light gray, fine grained, calcareous sandstone; trace of dense, brown limestone; trace of pyrite.

hh50-h500 Shale, as above, with trace of dense brown, microcrystalline limestone at base.

4500-4520 Shale, as above, with some dense, light brownish-gray limestone.

associate shale, light gray, medica firm, splicite. In a calcuracie; some brown microssystalithms limestone; to a will by madium grained, slightly calcareous sandstone.

4540-4530 Shale, light gray, medium firm, slightly calcareous; trace of gray crystalling limestone; trace of dark red, silty shale.

4580 Sample Top: Spearfish.

4580-4680 Siltstone, rdd very fine grained, fairly porcus; trace of soft, white gypsum; trace of soft red silty shale.

4680-4710 Sandstone, red, very fine grained, fairly purous; trace of light gray limestone; trace of red milty shale.

1710 Sample Top: Amsden.

4710-4740 Limestone, light gray, amorphous, dense; some light pink crystalline dolumits; trace of red, green and gray shale.

4740-4300 Limestone, medium brown, amorphous, dense; some red, green, gray, purple shale.

4800-4850 Shale, red, gray, green and purple, medium soft, slightly ankeritic, variegated; some dense, light gray, amorphous limestone.

4850 Sample Top: Heath.

4850-4880 Shale, red, green and gray, medium firm, splintery gray shale; trace of dense, light gray, emorphous limestone.

4880-1011 Sandstone, red and gray, fine to medium grained, very porous, angular; trace of red green gray shales.

4911-4918 Core No. 1, recovered 3 feet.

4918-4980 Shale, red and gray, firm, chunky; some reddish-brown and gray, fine to medium grained, angular sandstone; trace of green shale.

4980 Sample Top: Etter.

4980-5005 Shale, red and gray, firm, slightly calcareous; some firm green shale.

5005-5080 Shale, red, gream, gray, firm, calcarsous; some dense, light gray, amorphous limestone.

5080-5105 Shale, as above, with trace of light gray to white anhydrite.

5105-5115 Limestone, very light gray, sandy, medium hard, fairly porous; some light gray, slightly calcareous shale; trace of red and green shale; trace of white anhydrite.

5145-5160 lámestone, very light prap, casspirate, dames some grzy, calcarocus enale; trace of tof shake. 5160 Sample Top: Kibboy Sand. 5160-5200 Sandstone, red and light gray, fine to medium grained, pourly sorted, subrounded to reinded, frosted grains; trace of red, gray and green shale. 5200-5225 Shale, dark gray to black, carbonaceous; some red, fine grained sandstone; trace of red and grean shale. 5225-521:0 Sandstone, light gray and red, fine to medium grained, poorly sorted, subrounded; trace of red, green and gray shale. 5240-5260 Shale, medium to dark gray, firm, slightly carbonececus; some red, fine to medium grained, poorly sorted sandstone. 5260-5285 Sandstone, light brownish-gray, medium grained, poorly scried, subrounded, frosted; trace of red, green and gray shale. 5285 Sample Top: Kibbay Limestone. 5285-5300 Limestone, very light gray, amorphous, dense; numerous emall brown crystals of dolomite; trace of fine grained, red sandstone; trace of white anhydrite. 5300-5310 Limestone, very light brownish-gray, sandy with muserous fine send grains; some dense brown limestone. 5310-5330 No Samples. 5330-5385 Sandstone, red, very fine grained, calcareous; numerous medium to coarse, frosted grains scattered throughout. 5385 Sample Top: Mediaon. Anhydrite, white, coft; trace of red, fine grained sandstone 5385-5395 and siltstone. 5395-51115 Sandstone, red, very fine grained, very silty; trace of white enhydrite. 51172-2160 Dolomita, very dark gray, fine crystalline, dease; seas soft white anhydrite; trace of light gray, fine crystalline lime-

Limestone, dark brownish-gray, pseudo-colitic, modium soft; some soft, white anhydrite; trace of dark gray, fine crystalline

5480-5500 Core No. 2, recovered 20 feet.

dolomite.

2790-2780

- 5500-5512 Core No. 3, recovered 11 feets
- 5512-5520 Core No. L, recovered 8 feets
- 5520-5540 Limstone, brownish-gray, fine to medium crystalline, porcus; some dense brownish-gray, limstone; trace of white anhydrite at base.
- 5540-5560 Limestone, dark gray to black, amorphous to fine crystalline, very argillaceous; some soft white anhydrite; trace of light gray, fine crystalline dolomite.
- 5560-5570 Anhydrite, white, medium soft, fine crystalline; some dark gray, fine crystalline, argillaceous limestone.
- 5570-5580 Dolomite, medium gray, fine crystalline, dense; some dark gray ergillaceous limestone; some soft, white anhydrite; trace of red colomitic shale.
- 5580-5600 Salt and anhydrite, clear amorphous salt, soft white anhydrite; trace of brownish-gray, amorphous -fine crystalline limastone.
- 5600-5624 Anhydrite, light gray to white, radium soft; trace of light gray fine crystalline dolomite; trace of medium gray, fine crystalline limestone.
- 5621-5660 Core No. 5, recovered 36 feet.
- 5660-5670 Limestone, dark gray, fine crystalline, fairly porcus, good oil fluorescence and stain.
- 5670-5680 Dolomite, light gray, soft, earthy; some brownish-gray, amorphous limestone; trace of white anhydrite.
- 5680-5690 Dolomite, light gray, very sandy; numerous coarse sand graine; some dark brownish-gray, amorphous limestone.
- 5690-5730 Dolomite, brownish-gray, emorphous, dense; some brownish-gray, fine crystalline limestone; trace of soft white anhydrite.
- 5730-5760 Limestone, brownish-gray, fine crystalline, dense; some dense amorphous colomic; trace of soft, white anhydrite.
- 5760-5780 Dolomite, brownish-gray, anorphous, dense; some brownish-gray, amorphous limestone; trace of white anhydrite.
- 5780-5815 Core No. 6, recovered 35 feet.
 - TOTAL DEFTH: 5815' Driller equals 5817' Schlumberger.

SUB-SURFACE SURVEY

STATIC

		on Field Bast			
nty Room	sevelt	State Mon	tana	Date May 21,	1954
1.6111	1.44				
A Artist				and the second	
		e de la fici			
	T-D 58171		Possesias Wed1	900	
				Nine	
	Elevation 2.	116',KB	Casing 52" OD	@ 5800 ·	
2	Perforation	5636-44. 5654-641	Tubing Packer 6	57801	
	and hadden and a common of	man a said a fair fair a f	har har the day the same in the same of the	Consider Total A	
15 Mary 19 10 10 10 10 10 10 10 10 10 10 10 10 10	ALL THE THE PART OF BUILDING		761		
1		Datum Point 55	56'		
form of our					
COLUMN SERVICES	<u>t.)</u>	EXTENSION (in.)	PRESSURE	The state of the s	GRADIENT (#/10
COLUMN SERVICES	<u>t.)</u>	EXTENSION (in.)	PRESSURE	The state of the s	GRADIENT (#/10
TH	t.)	EXTENSION (in.) 0.685	PRESSURE		GRADIENT (#/10
TH	t.)	EXTENSION (in.)0.685	<u>PRESSURE</u> 681	2	37.1
TH	t.)	EXTENSION (in.) 0.685	<u>PRESSURE</u> 681	2	37.1
TH 1000 2000	<u>t.</u>)	EXTENSION (in.) 0.685 1.070 1.434	PRESSURE 681 105	2	37.1
TH 1000 2000	<u>t.</u>)	EXTENSION (in.) 0.685 1.070 1.434 1.795	PRESSURE 681 105 139	 20 50	37.1 34.3 33.5
TH 1000 2000	<u>t.</u>)	EXTENSION (in.) 0.685 1.070 1.434	PRESSURE 681 105 139	 20 50	37.1 34.3 33.5 33.5

2480

2548

2632

34.5

34.0

32.8

and the state of t

5400

5656

2.663

2.751

All measurements are from KB.

Temperature at 5656' ... 246° F.

This is a re-run from the May survey.

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Location: C NW NW Sec. 11-T28N-R51E
                                               Coring Intervals:
                                               #1 4911-4918 Rec. 3' Heath
           Spacing = 40 ecres
                                               #2 5480-5500 Rec. 20! A-2
Elevation: 210h Gr. - 2116 K.B.
                                               #3 5500-5512 Rec. 11 A-3
Spudded:
          1-1-53
                                               #4 5512-5520 Roc. 8 A-3
Completed: 2-18-53
                                               #5 5624-5660 Rec. 36' B-1 & 2
           5815' Drlr = 5817' Schl.
T.D.:
Prod. Zones: B-1 (5635-44) B-2 (5654-64)
                                               #6 5780-5815 Rec. 35 C-1 & 2
             C-2 (5800-171)
           Schlumberger Tops
                                               Drill Stom Tests:
                                               DST #1 re-run 4891-4904, Heath. Op 1 hr.
                       Datum
                                Thickness
               Depth
Judith River
                772
                       +1314
                                               SI 20 min. Rec. 390 cln, blk 39.6 grav.
               2352
                       - 236
                                               oil, 180' o & g cut mud, 445' muddy s.w.
Greenhorn
                       - 807
                                               w/show o & g. Chl. 23,000 ppm. IBHFP 60,
Muddy Sd
               2923
                                               FBHFP 405, BHSI P 2275, Hydro 2705.
                31.38
                       ~1022
Dakota Silt
               4343
                       ~2227
                                               DST #2 re-run 5503-20', A-3. Op 4 hrs, SI
Piper Ls
                                               20 min. Rec. 15' cln, free oil, 75' o & g
Amsden
               4698
                       -2582
                                               cut mid. IEHFP 55 BHSIP 665 Hydro 3000.
Heath
             **L823
                       -2707
                       -2874
Otter
               ს.990
               5122
                       -3006
Kibbey Sd
                       -3170
               5286
Kibbey Ls
               5374
                       -3258
Madison
             *#5L72
                       -3356
                                   50
A-l
             ***5F92
                                   1.8
A-2
                       -3369
             44455011
A-3
                       -3388
                                  163
              ¥5522
                       ~34.06
                                  151
A-L
               5636
                       -3520
                                   80
B-1
               5654
B-2
                       -3538
                                  161
                       -3559
                                   70
             H15675
B-3
             *445710
                       -359h
                                   60
B-L
B-5
               5748
                       ~3632
C-1
             3H5790
                       -367ls
                       ~3692
                                               History Subsequent to Completion:
              *5808
  **Probable prod. Zones (From DST struc-
    ural position, etc.
                                               4-17-55: Blanked off B-1 and B-2 zones.
   *Shows
      Drill Pipe Corrections (Made)
      3735 Driller = 3725 | SLM (-10')
      5630' Driller = 3625' SLM (- 5')
```

•2

WORKOVER HISTORY NO. 1

February 17, 1959

Lease and Well Number: East Poplar Unit Well No. 15 County: Roosevelt State: Montana Field: East Poplar C NW NW Section 11, T28N, R51E Well Location: Status Prior to Present Job: Date Completed: February 18, 1953 Pate of Last Workover: None T.D.: 5817 PBTD: 5800° Producing Zone: "Bl & 2" Zones of Madison Formation Perforations: "B-1" Zone - 5630-5644 and "B-2" Zone - 5654 - 56648 Cumulative Production through December, 1958: 292,226 EO and 158,121 EW Latest Test: January, 1959, pumping 452 BFPD, 80% water (90 BOPD, 362 BWPD) Justification for Workover: to increase production and lower water cut. Summary of Workover: PBTD 5800: - Rigged up pulling machine to DOC squeeze "B-1" 1-19-59 (5635-441) and "B-2" (5654-641). PBTD 5800° - Down due to power failure. Workover rig unable to 1-20-59 work due to sub-zero and blizzard conditions. PBTD 5800' - Waiting for weather to clear. 1-21-59 PBTD 5800' - Preparing to DOC squeeze "Bl & 2" Zone perforations. 1-22-59 PBTD 5800 - Spotted gel plug above packer and DR plug. Reverse 1-23-59 circulated hole with oil, and broke formation. Injected 2 BPM at 1800#. Squeezed "B-1" (5635-441) end "B-2" (5654-641) perforations with 50 sacks regular cement mixed with diesel oil. Squeezed 30 sacks out into formation. Maximum pressure 2500#. Reversed out excess cement. Cleared perforations with 3 barrels of oil at 2300#. Shut in overnight. 1-24-59 PBTD 58009 - Fumping. PBTD 5800' - Water 80%. No test, Chlorides 85,000 PPM. 1-25-59 PETE 5800' - On 24 hour test, pumped at the rate of 80 EFFD, 1-26-59 92% water (6 EOPD, 74 BWPD). PBTD 58000 - On 18 hour test, pumped at the rate of 86 BFPD, 94% 1-27-59 water (81 BWPD, 5 BOPD).

Summary of Workover continued

1-28-59 PBTD 58009 - Pumping, no test, water cut 82%. PBTD 5800° - On 20 hour test, pumped at the rate of 68 BFFD, 835 1-29-59 water (12 BOFD, 56 BWPD). 1-30-59 PETD 5800' - On 24 hour test, pumped at the rate of 70 BFFD, 73% water (19 BOFD, 51 BWPD), chlorides 88,000 PPM. 1-31-59 PBTD 5800° = On 20 hour test, pumped at the rate of 81 BFFD. 76% water (19 BOFD, 62 BWFD). 2-1-59 FETD 5800: - On 20 hour test, pumped at the rate of 79 EFFD, 79% water (16 BOPD, 63 BWPD). 2-2-59 PBTD 5800: - On 7 hour test, pumped at the rate of 60 BFFD, 76% water (19 BOPD, 61 BWPD). PBTD 5800° ~ On 19 hour test, pumped at the rate of 86 BFPD, 81% 2-3-59 water (16 BOPD, 70 BWPD). To treat with MEA as soon as the weather breaks. 2-7-23 PBTD 5800 - Pumping, no test. 2-5-59 FBTD 5800 - Treated "B-1" Zone perforations (5635-L41) and "B-2" Zone perforations (5654-64:) with 500 gallons MCA. Spot ecid down casing. Injected MCA at rate of 1 BFM at 2000#. Blood back & barrels MCA, then pumped back into formation. Repeated same operation 4 times. Started well pumping. 2-6-59 PBTD 5800' - Pumping, no test. PBID 5800' - On 24 hour test, pumped at the rate of 242 BFED, 84% 2-7-59 water (39 BOPD, 203 EWPD), Chlorides 97,000 PFM. Section 1. Section 1. 2-8-59 PBTD 58001 - Pumping, no test, 2-9-59 FETD 58000 - On 18 hour test, pumped at the rate of 244, BFPD, 87% water (32 BOPD, 212 BWPD). 2-10-59 PBTD 58001 - Pumping, no test. 2-11-59 PBTD 5800 - Pumping, no test. 2-12-59 PBTD 58001 - On 18 hour test, pumped at the rate of 371 BFPD, 86% water (52 BOPD, 319 BWPD). This is the "Bl & 2" Zone

workover potential, to drop from report.

Recap of Workover:

- 1. Final Perforations: 5635-5644 and 5654-5664 (unchanged)
- 2. Final PBTD: 5800! (unchanged)
- 3. Workover Potential: Pumping 371 BFPD, 86% water (52 BOPD, 319 BFPD)
- 4. Geologic Name of Producing Zone: "Bl & 2" Zomes of Madison Formation

Results of Workover: Oil production decreased from 90 BPD to 52 BPD and water production decreased from 362 BPD to 319 BPD, or from 80% to 86%.

Workover Unsuccessful.

IMIE: April 16, 1955

FROM: Hurphy Corporation
Rocky Mountain District
Poplar, Montana

TOR

EAST POPLAR UNIT NO. 15

WORKOVER HISYCRY NO. 2

The second secon					
Lease and Well Humber: Rase Ponley Dair No. 15					
Field: Bast Poplar County: Roosevelt State: Montana					
Well Location: C NW MW Section 11, T28W, R51E					
STATUS PRIOR TO PRESENT JOB:					
Data Completed: February 10, 1953 Date Last Workover: February, 1959					
Producing Zone: E-1 & 2 Zones Perforations: 5535-44' & 5654-64'					
T.D.: 5917' PBTD: 5890' Cumulative Production: 0-Zone 44,595 BC					
171,050 M7 B-1 & 2 Zones 625,516 B0 1,194,028 BV					
Locest Test: May 15, 1969 319 BFPD 94% W.C. 200 BMPD 19 BOPD					
SUSTIFICATION FOR HORKOVER:					
Run Cement Bond, Neutron and Collar Logs. Sen drillable bridge plug with one sack of cement on top (block squeeze if needed). Perforate the Heath Sand porosity 4891-99' (8') I hole per foot. Sub test. Acidize with 500 gallons (if needed) to clean up and Sand Frac with 10,000# 20-40 Sand and 5,000# 12-20 Beads. Production Test.					

SUMMARY OF MORKOVER:

- 5-23-59 5800' PBTD Rig up pulling unit to perforate Heath Sand 4891-99'. Pulled rods and shut down for the night.
- 5-24-69 5800' PEED Fulled and strapped tubing out of hole. Ran Neutron Correlation and Collar Log from 5717 to 4800' and Sonic Cament Bond from 5714' to 4600'. Found top of cament at 4796'. Good to fair cament bond 5714' to 5600', excellent bond 4892 to 4878', fair bond 4878' to 4850', good bond 4850' to 4834'. Balance of bond ragged.

Ran gauge ring and junk basket. Ran WASP bridge plug on wireline. Set top of plug at 5000'. Dumped I sack of cement on top of bridge plug. New PETD 4992'.

Installed BOP. Filled 5-1/2" casing with salt water and tested casing and bridge plug to 1500%, Held OK.

Perforated the Haath Vormation from 4891' to 4899' with Wireline Sabre Vet Gun and 50 gram jets, I hole per foot.

Removed BOP and ran Baker Ret-matic Packer on $2-7/8^\circ$ tubing and hydrotested tubing in hole to 5000%. Ran 1 joint $2-7/8^\circ$ tail pipe below packer and landed bottom of tail pipe at 4907° .

Rigged up swab line and made 4 runs with same. Could not detect any fillup. Shut down due to derkness. Fluid level 4800'.

5-25-69 4992' PBTD Fluid to surface Tubing pressure 700% after 10 hr. shut in. Open well to test tank. Flowed 2 bbls. oil in 30 mins., well dead. Shut in for 20 mins... Pressure build up 35 PSI

Rigged up swab line and swabbed as follows:

19.38 Bbls. Fluid at 15% Water No fillup
2nd. Run
4.56 Swab rubbers core up lost bottom fluid
3rd. Run
6.84 BF @ 26% Water 500' Fillup
4th. Run
5.42 BF @ 44% Water 200' Fillup
5th. Run
7.40 BF @ 9% Water 200' Fillup

Sweb rate after making the six runs shown above = 10 BFPH = 240 BFPD 42% Water 139 BOPD 101 EMPD Gravity 42.6 at 102 degrees.

Ren rods, pump and hung on beam. To pump to tank bettery overnight. To be tested in 210 test tank in A.M. Found fluid 2000' above seating nipple when going in with the rods, approximately 2800'.

Pump Size 2-1/2" % 2" % 16' RMAC Ni-Plate Ebl. Pump. No. Mur-4. Well pumped up. Had flowline leak shut in overnight.

- 5-26-69 Pumping No Test
- 5-27-69 Pumping Heath Sand No Test Water Cut 3:00 P.M. 5-26-69 10% Will test today.
- 5-28-69 Fumping from the Heath Sand 6 Hr. Test Pumped 27.64 BF 11% Water Cut 111 BFPD 99 BOPD 12 BWPD.
- 5-29-59 Pumping from the Heath Sand 6 Hr. Test Pumped 24,52 BF 11% Water Cut 98 BPPD 87 BOPD 11 BWPD
- 5-30-69 Pumping Heath Sand No Test
- 5-31-69 Pumping Heath Sand No Test
- 6-1-69 Pumping Heath Sand No Test

- 5-3-69 Fumping No Test
- 6-4-69 Ryaps to Sand Frac No Test
- 6-5-69 4992 PEMD Prep. to ambampt to release packer and reverse out send.

Set Retrievamentic Packer at 4846' Tail pipe at 4877' Sand Frac Mecth Sand perforations 4691-99' as follows:

Broks fe	rmation w	with 30 bbls.	oil at	4200# a	t 9-1/2	BPM	•
2000@ 20)-40 Sand	at 1/2# per	gallon		43	.000	O BPM
2000# 20)-40 Sand	at 3/4# per	gailon		Est.	1500 1	O DPM
4000# 10)-20 Sand	and 12-20 Be	eads at 3	l# per g	allon 40)GO# 1	O BPM

Well sanded out with 4000# 20-40 sand and 2000# 10-20 sand and 2000# 12-20 beads out into formation. The 10-20 sand and 12-20 beads were mixed. Total sand and beads out 8000# 24 Gallons HOWCO gyp ban out.

Note: Packer developed lack. Have sand on top of packer and sand in tubing.

6-6-69

PETD 4992 Tubing Pressure 50% Casing Pressure 0%

Rooked up test line and flowed well to tank. 30 min. flow rate 5.13 bbls.

Well flowing approximately 10 stream. Hooked up Halliburton pump truck to kill well with salt water. Gould not break circulation due to sand.

Killed well Installed stripper head. Released packer and worked same keeping 4000% PSI on tubing. Broke circulation and displaced hole with salt water. Reversed sand. Washed down 3 joints to clean hole below parforations and reversed out of hole.

Pulled tubing and retrieved Baker Betrievamatic packer. Ran production tubing in hole. Set Guiberson Tubing Anchor with 26,000# pull. Tied back and ran rods. Put on beam. Landed tubing at 4617 (end of tail pipe).

Pumping 50% Water this A.M. To test today.

6-7-69 4992 PETD Pumping 4 Hr. Test Pumped 64.98 BF 18% BS&W = 390 BFFD 70 BWPD 320 BOPD

Load Oil Used 305
Recovered 320
Formation Oil 15

- 6-8-69 4992' FEED Pumping 4 Hr. Test Pumped 67.26 BF 19% W.C. = 404 BFFD 327 BOPD 77 BWPD.
- 6-9-69 4992' PEND Fumping No Yest Rods Parted

6-10-69

Pumping from the Heath Sand 4 Hr. Test Pumped 57.69 BY 14% W.C. 298 BOPD 48 BWPD

This is the Heath Sand Initial Potential. 'To Drop From Report

The Reach Send from East Popler Unit 15 is produced through a matering separator with East Popler Unit No. 7 then into East Popler Unit "D" Battery and commingled with Madison Oil.

RECAP OF WORKOVER:

Pinal Perforations

4891' to 4899'

Final PBTD

49921

Workover Potential:

346 BFPD 14% W.C.

298 BOPD 48 BWPD

Geologic Name of Producing

Zone:

Heath Sand

Results of Workover:

Workover Successful Oil production was increased from 19 BOPD to 298 BOPD and the water was decreased from 300 BWPD to 48 BWPD.

EAST POPLAR UNIT NO. 15 WORKOVER HISTORY NO. 3

Lassa and Well Number:	East Poplar Suit No. 15.	ر المساورة المساورة المساورة المساورة والمساورة والمساورة والمساورة المساورة المساورة المساورة المساورة المساورة المساورة والمساورة المساورة المسا
Field: East Poplar Thit	County: Roosevelt	State: Montone
Well Location: C NW NN Se	ction 11, T28N, R51E	والمنافظة والمنافظة والمراوات المراوات المراوات المراوات المراوات المراوات المراوات المراوات المراوات المراوات
STATUS PRIOR TO PRESENT JOB:		
Date Completed: February 18	. 1953 Date Last World	tover: Hay, 1969.
Producing Zone: Heath San	d Perforations:	4891' to 4899' (
T.D.: 5817' PBYD: 6992'	Gumulative Production:G	2-Zone 44,595 EO 171,050 BM
B-1 & 2 Zon= 425,514 BO 1,	194,028 BW Heath Saud 22	,117 BO 26,177 EW
Last Test: 4/8/71 51 BFPD	89% W.C. 45 BWPD 6 BOPD	

NUSTRE CATTON NOT WORKOVER:

To increase production by soldising Heath Saud formation and treating formation with scale and corrosion inhibitor.

SUMMARY OF WORKOVER!

4-19-71 Rig up pailing whit to acidize in A.M..

4-20-71 PBTD 4992' Pulled rods. Pulled and strapped tubing out of hole. Ran Baker Model "R" single grip packer with 1 joint 2-3/8" tail pipe below packer. Ran seating nipple 1 joint above packer. Hydro-tested tubing in hole to 5000 PSL-Landed bothom of tail pipe at 4898'. Set Model "R" packer. Filled annulus and tubing. Pressured annulus to 1300 PSL. Broke formation with water down tubing with 2600 PSL at 2-1/2 BPM. Acidized Heath Sand perforations at 4891-6899' with 500 gallons 15% regular soid, with 6 gallons of inhibitor and 2 gallons emulsion breaker added. Followed soid with 110 gallons of WF-23 Treat-olite (corrosion and scale inhibitor) mixed with 20 bbls. formation water. Over flushed chemical with 125 bbls. formation fluid. Acid on perforations 2 BFM at 2100 PSL. Formation broke to 1600 PSL at 2 BPM. Max. inj. rate 4 BFM Mix. 1-1/2 BPM Average 3-1/2 BPM Instead S.Z. 16000 Mix. PSL 30000 Average PSL 21000 Min. 16000 15 Min. S.L. 15000. Bleed book 7 bbls. fluid to test tank. Mell flowing approximately 1" stream. Rigged down Bowell. Installed valve and pressure gauge in tubing. Pressure increased to 300 PSL after 30 mins. S.Z. Shub well in for the night.

4-21-71 4992' PETD Pumping No Test

4-22-71 4992' FDTD Fumping 11 SPM 64" Stroke 1-1/2" Bore Pump Embra oil production 10 BO 20 Hrs.

4992' PBTD Fumping Production 8 BOPD 24 Hrs. = 160 BFPD 95% W.C. 152 BMPD 4-23-71 S BOPD

4-24-71 4992' PBYD Fumping 98-99% Water No Test

4-25-71 4992' PBTD 4 Hr. Test Pumpad 26.76 BF 99% W.C. 161 BFPD 2 BOPD 159 EWPD.

4-26-71 4992 PBED 4 Hr. Test Pumped 26,72 DF 98% Water 160 BFPD 3 BOPD 157 BWPD

Water Chlorides 43,000 PPM

4-27-71 4992' PDTD Fumping Changed SPM from 11 SPM to 15.5 SPM Water Cut this AM 90%

4-28-71 4992' PETD Pumping Fluid Level 2604' W.C. 88%

4-29-71 4992' PBTB Pumping Heater Treater trouble Est. Production 21 EOPB 87% Water = 162 BFPD 87% W.C. 21 BOPD 1414BWPD

4-30-71 4992 PBTD Fumping 4 Hr. Wast Pumped 38.39 DF 260 BFFD 87% Water DOPD 230 BWPD.

Workever Potential

TO DROP FROM REPORT.

RECAP OF WORKOVER:

Final Parforations:

4891' to 4899' - Recharged

Final FETO:

4992:

Workever Potential:

260 BYPD 87% W.C. 30 BOPD 230 EMPD

Gaologic Name Of Producing Zore:

· Macth Sand - Unchanged

Results Of Workover:

Production was increased from 6 BOPP to

30 BOPD - Workovar Successful.

EAST POPLAR UNIT NO. 15

SUPPLEMENT

September 12, 1969

S.I. 1 Hr. and 20 Mins.

Heath Zone - Pulled rods and ran Amerada B.H.P. bomb to determine fluid level. Made stops at the following depths:

Top	0
1000 =	0
2000 =:	25
2500 =	35
3000 =	222
3500 =	403
4000 =	618

Fluid Level noticed (on Wireline at 2581'

Fluid Level calcated at 2472'

MAST POTLAR UNIT NO. 15 FORMOUSE SISTERN NO. 4

Yala Mas m	La Amben: Eost Fobler Bait No. 15
Field: Mag	County: Roosavalt State: Montine
Wall Locati	on: 2 07 NT Section 11, T28N, P518
STATUS PRIO	r vo Presen joz:
Data Comple	186: <u>February 18, 1953</u> Date Of Lest Worksher: <u>Agril, 1971</u>
W.D.: <u>581</u>	7' PBTD: 4992' Cumulative Production: C-Zona 44,595 BD
177.052 DE_	3-1 & 2 625,514 BO 1,194,028 BB Meath Zone 26,519 BO 93,221 WW
Richard Mest	: June 4, 1972 234 EVPD 5 BOPD 229 EMPD 98% W.C.
Host Bopler Squadua the	ON MOR WORDNIER: Unit No. 15 is producing at the case of 5 2070 which is unstandical. Panch Jornation and propose the S-1 & 2 Cones. When the E-Zones were shut a producing at the mate of 319 BFPD 19 80MD 200 DMMD 90% DGM. This of 1959. The E-Zone production should be as good as the last mass.
SECTION OF	BOMISVER:
	AS92' FEED Prayairing to move in and rig up pulling unit. Bulled rods and bubing.
	ASDA' FOWD Fragaining to drill out squasch job. Dailed node and tubing - Ficked up Behav Betrievomatic Dashau and hydrocasted to 6500'. Escablished injection rate at 3 BVM - 1000 SET - Equated Machine perforations with 50 sacks Nates, .2% HR-6 added. Charmad tool and staged cement for 1-1/2 hour at 5 min. intervals - Venezation squascad at 3500 BST with 8-1/2 bbls. in formation. Lafe 3-1/2 bblo. in onsing. Daleased proscure and got 1/2 bbl. blead back Deprendured. Mald CK. Re-leased project and publish tubing. S.E. overnight.

7-26-TP 6002 PERFORMING to run tubing and rods.
Then in hole with 4-3/4" bit and easing exapper to drill out nowers. Magnical ball nement at 4718' - drilled out 181' of cament and presence trained and recreas to 1500 PGT for 30 mins., Held OK. Drilled out 1 such of owners and FiOP bridge plug (6 hrs. and 30 mins.) and chased it good E-1 G-2 partnerships at 5635-44 and 5654-66'. Pulled bit above perforations and shut in overnight.

7-27-72 5728' PBTD Pump testing
Fo test - Pumping 100% water
Unable 5728' and tagged bottom. Circulated bole clean. Rem tubing and
role. Put well to pumping. This is a new FDMD after chasing builded plug
to bottom.

7-28-72 5728' PDTD Pumping 100% water

7-29-72 5728' PBTD Pumping 100% water

7-30-72 5728 PRTO Pumping 100% water

7-31-72 3728 PDTD Pumping 100% water

8-1-72 5728' PETO Fump testing 4 Hm, test - Fumped 66.94 EF = 402 EFFD 400 EWPD 89%% N.C. 2 DOWD

8-2-72 5728 PETD Pumping - No Yest

8-0-72 5728' PWTD Pump cesting 4 Hr. test Pumped 60.74 Bf = 334 BFPD 357 BWFD 96% W.C. 7 B07D

Pragad thre August 23

8-30-72 5728' VETO Fump testing 6 Et. Test Europed 51.54 DF = 369 DEVD 347 DWED 94% F.C. 12 DOSD WORMOVER POTENTIAL - TO DROW FROM REPORT

RECAR OF HORKOVER:

Whenl Parsonables: 5635-44' and 5654-54'

Final Fife: 5728°

Uprkover Potentiki: 369 BFFD 347 BWFD 94% W.C. 22 ROFD

Gableyin Harm Of Producing Zone: B-1 & 2

Results Of Pophaver: B-1-42 were producing at the rate of 19 BOPD then shut in - this production

was reguinad - Workovar Successful.

DOWELL INCORPORATED

TREATMENT REPORT

TREATMENT No.

STATION OR DISTRICT MANAGER

WNER	M 112	hn C	OAP	· 	_LEASE_	EI	oal.		VELL NO.	15	
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E, OR P.B. CASING	500 800	ARRIVAL ST.	ant,	5/80 5/00 100/1	1000	GALS. OF				BLEED	2.2 _{.88}
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. S & 600	500 800	57. A.	BBLS	Spc Ac/1	1000 1125 20	GALS. OF	DOWELL &			BLEED	24 BB
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TREATMENT REPORT

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1. 34 P.H.: CASIN	40 TUBING	\$70 \$7 \$7	TOINS BBLS. O	CUMI CUM /EEC FACID PER	REMARK NS W.	GALB. OF DOWELL ATEN WITT PEID TO B START ACI	offin diato	SLE	ED
1. 34 P.H.: CASIN	40 TUBING	OIT OF TANKS	BBLS. O	CUATA LEC FACID PER READING	REMARK AS COL	GALB. OF DOWELL ATEN WITT PEIL TO B START ACI START PU	oil offin dinto	SLE	ED
2 P.H. CASIN 2 '00	TUBING	OUT OF TANKS	BBLS. O	CUATA LEC FACID PER READING	REMARK	GALB. OF DOWELL ATEN WITT PEID TO B START ACI	oil offin dinto	SLE	ED
2 P.H. CASIN 2 '00	TUBING -/ 6-5-1 -/ 6-5-1 -/ 6-5-1	OIT OF TANKS	BBLS. O	CUATA LEC FACID PER READING	PER MINUTE	GALB. OF DOWELL ATEN WITT PEIL TO B START ACI START PU	oil offin dinto	SLE	ED
2 P.M. CASIN 2 '00 '3 2 '27 60 2 '39 60	1260	OIT OF TANKS	BBLS. O	CUATA LEC FACID PER READING	REMARK AS WAR	GALB. OF DOWELL ATEN WITT PEIL TO B START ACI START PU	oil offin dinto pocula Purpins	SLE	ED
2 P.M: CASIN	/200 2/6-3-1 2/6-3-1 2/60 2/60	OUT OF TANKS 25 27 28	BBLS. O	CUATA LEC FACID PER READING	PER MINUTE COLOR	STANT PURESUME	oil offin dinto pocula Purpins	SLE	ED
2 P.M. CASIN 2 '00 '3 2 '27 60 2 '39 60	/3 \$3 A -/ 6 - 5] A -/ 7 - 6] A -/ 7 -	OUT OF TANKS 25 27 28	BBLS. O FORMATION 2 7	CUATA LEC FACID PER READING	PER MINUTE	STANT PURESUME	oil offin dinto pocula pumpins	SLE	ED
2 P.H. CASIN 2 '00	/360 2/6-57 /200 2/00 2/30 2/30 2/30 2/30	OUT OF TANKS 25 26 27 28 32 36 400	BBLS. O BBLS. O PORMATION 2 7 //.5.5	CUMI UMA /EEC FACID PER READING 0	PER MINUTE COLOR	GALB. OF DOWELL ATEN WITH PEIL TO B STANT ACI SHUT PU RESUME IMERICAS	oil offin dinto pocula pumpins	SLE	ED
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2 '00 CASIN	/360 2/6-57 /200 2/00 2/30 2/30 2/30 2/30	011 or TANKS 25 26 27 28 32 40 5	PRISON PORMATION O 2 2 11.5 15.5 19.5	CUMI CUMI FACIO PER READING O	PER MINUTE CO 1.0 4.0 4.0 4.0 4.0	GALB. OF DOWELL ATEN WITH SEID TO B START ACI START	oil ottom dinto pochis Dungoins	COAM	ED SH BE
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1. 9 P.M. CASIN 2	// (-5-1) // (-5-1)	OUT OF TANKS 25 27 28 32 36.3 40 44.3 49.0	BBLS. O BBLS. O BBLS. O IN FORMATION J J J J J J S J S J S S S S S S S S S	ATION MENT TO	PER MINUTE CO 1.0 4.0 4.0 4.0 4.0	GALB. OF DOWELL ATEN WITH PEID TO B STANT ACI STANT ACI STANT ACI STANT ACI ACSUME MENZASE DUMPI 2466/ AC	oil ottom dinto pochis Dungoins	COAM	ED SH BE
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STAGE NO.

STATION OR DISTRICT MANAGER

TREATMENT REPORT

TREATMENT No. WILLISTON N.D. DATE STATION. DISTRICT RUBSEVELT REPRESENTATIVE LOCATION WELL DATA Cr Zone PERFORATING DATA OR PAY ZONES 5 800 TO SHOTS/FT. FROM то PRESENT TOTAL DEPTH 58/7 P. B. FROM 5817 $Q \mathcal{L} / 2$ 1800 PIPE DATA-CASING SIZE SKS. CEMENT. CASING DEPTH. PRODUCTION-OIL WATER LINER DEPTH-FROM G. O. R. LINER DESCRIPTION. INITIAL TUBING SIZE 2 11 ENE DEPTH 8 80 6 PRESENT PACKER-TYPE Ballen PAUDEPTH 5706 ACIDIZING. SHOOTING AND LOGGING RECORD-PACKER FURNISHED BY OPERATOR 455 DOWELL COMPLETION DATA-DATE CABLE TOOL DRILLING FLUID ROTARY_ SIZE OPEN HOLE. DETAILED RECORD OF TREATMENT TIME REMARKS OOO JE/X 500 A.M. OR P.M. CABING TURING ARRIVAL AT LOCATION WITH & GOO GALS. OF DOWELL X & W LOPING JET BBIS 0,44 800 1800 O_sels. PARSSUNE D /BBLS SBLS. OF ACID OUT OF TANKS PER READING 110 FORWATION 6 σ 2.47 800 2000 punped START 481 800 2000 Pumping STEALY २ १ Punping Standy · PACSSUNE MORON 251 800 2800 51 45 80 Pumped 2158 800 2250 22 2.0 259 800 2400 <u>2,0</u> 3:01 800 24-0 0 PRESSURE DRUP 3:02 Por 2200 8 4.0 2:03 800 2300 PURPIN 4,0 2104 800 200 9 1:05 8cc 2200 91 All Acid displaced, Jub complete Shut down prissure LEFT LOCATION. IF TREATMENT LS NOT CONVENTIONAL LIMESTONE FORMATION TREATMENT TO INCREASE OIL OR GAS PRODUCTION, STATE PURPOSE OF TREATMENT, SERVICE ENGINEER STATION COPY.

DOWELL INCORPORATED

TREATMENT REPORT Acidizing SERVICE

DISTRICT_	#	15		5	TATION_	02	Glendine DATE 9- 3 , 1957
OWNER	Mu	coly	Corp	10 × 17	·	LEASE.	E paj WELL NO. 99
POOL		ENST	Page	10r		COUNT	Y BOULEN: IT STATE MONTANA
LOCATION_	_5	<u> </u>	-38-	0-1W	·	_OWNER	'S REPRESENTATIVE JAMES + FREEMAN
		62 1	200		·		CASING SIZE 5-4" WEIGHT / 5-4#
FORMATION					, ¬		
PAY FROM_				<u> 5-2</u>			CASING DEPTH 570 BACKS CEMENT 400
PRESENT TO			_	_P. B. FROI	•		TUBING SIZE TO SIZE WT. TUBING SIZE 2 1 29 E DEPTH 5 728 PERF
DATE WELL				_SIZE O. H.			
PERFORATI			ZONES:				PACKER: TYPE BAKEY DEPTH 5728
внот	9/F001	г		ОМ	1	ro	TUBING: VOLUME 3 4 ALLOWABLE PRESSURE YOU 3
	/-		37	/ 	حتي.	2.7_	CASING: VOLUMEALLOWABLE PRESSURE
							PRODUCTION: INITIAL PRESENT.
	•						ACID. SHOOTING & FRACTURING RECORD.
							
TREATING M	ATERI	ALSı					TREATING EQUIPMENT:
TYPE			AMO	TNUC		•	PUMPING EQUIPMENT TO PLOOP
ske jujo	2 [[e/4:da9	<u></u>	1000,	94//25	 -	MIXING OR BLENDING
							FLUSH TANKS
							OTHER Jaciler
=114C	222			D.4.0.0.0.0.0	05 5 1115		REMARKS
TIME -		BSURE	OUT OF	BARRELS	OF FLUIC	PER	· REMARKS
A.M.OR P.M.	CASING	TUBING	TANKS	FORMATION	READING	MINUTE	
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						•	ARRIVED AT LOCATION
7/00							STORT 2456/ Acid dans Tubing
							STERT 10 Sole Oil To Sout Kild
115							Field spotted set Backer
21264			34				Start Roid information
2 2 2 2	200	7000					SINTASINA
	100	<u> </u>					54xTding
7:40 /	100	س ریم کی کت	36			-2	StuTdown
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9:54 1	840.	3450	<i>े</i> ।	4	2	کید	Freding Pressure
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10:08 1	40C	AC.40	25	- <u>- 24</u>	<u>J</u>	3:0	All Acid discloset . Stat land
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0118_		1500					10 minute shat in Krissyre
							·
TOTAL BBI	LS. PUN	MPED: FILL	. & BREAK	DOWN		<u> </u>	TREATING FLUID 24 FLUSH 34
AVERAGE	PATE	TREATING	FLUID	ax An	7. 5.	OPM	- GUAN SAPKFLUSH MIN . 3 B.F.M.
TREATING					150		MINIMUM 4345-0
IREATING	PRESS	UKEI MAX					minimum — Z D D
				12			

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SERVICE ENGINEER....

GREEN—District Office Copy PINK—Station Copy

_STATION MANAGER...

TREATMENT REPORT Acidizing SERVICE

DISTRICT	4/5		ST	ATION_	02	Glandere DATE 9-4, 1957
OWNER M	uraln	Corn	ostation	7.4	LEASE	EPG WELL NO. 89
			,		_COUNTY	
LOCATION	SEC	1-28	- 5-14		_OWNER'S	B REPRESENTATIVE James + Freeman
					····	
FORMATION						
FAI FAUM						
		_				
			.9IZE O. H	 -		
)T	_				
·					<u> </u>	
	 -					
						ACIDI SHOOTING & FRACTORING RECORD
TREATING MATER	IAL Sı					TREATING EQUIPMENT:
TYPE		AMO	UNT			PUMPING EQUIPMENT TO Plans
				an llun	<u> </u>	MIXING OR BLENDING
Brug-N- N	whom Co	<i>!!</i>	10			FLUSH TANKS
						OTHER JANA - 1 SINET!
TIME PRI	ESSURE		BARRELS	OF FLUIE	•	REMARKS
A.M. OF P.M. CASING	NOR MELON COLONY FROM STATE WELL NO. IT STATE MODIFIES TO STATE WELL COMPANY TO					
2/36						ARRIVED AT LOCATION Sing 66 mg.
3:0 =				_,		
3,20		- 		_		
S=	EAST PROBLEMENT THINKS THE BARRELS OF FLUID E PRESSURE F PRESSURE E PRESSURE E PRESSURE E PRESSURE F PRESSUR					
2,03	<u> </u>				·	
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J.44 1500			<u> </u>		. 	
		84	50	12	4.0	
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1:57 1500	600					Resume Praging
1,00 /500	1700					
4:03 1400						
4106 1400						
4:09 1400						
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<u> </u>	2480	·				minule Shat in Trissare
					OLSTA 11	_
TREATING PRES	SURE: MAX	IMUM		২ ৫৩		MINIMUM 3 5-00
SERVICE ENGINE	ER	/জ	: Ox	·4~		STATION MANAGER

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GREEN—District Office Copy PINK—Station Copy

TREATMENT REPORT Punp ____SERVICE

DISTRICT #/6	ST	ATION 02	Glandire DATE 9-9, 1857
OWNER Muchy	Caca a astrai		840 WELL NO. /-1)
POOLEAST	Poplar	LEASE.	y ROGSEVELT STATE MONTANA.
	1-291-5-12		S REPRESENTATIVE ZJ. Dowden
FORMATION DA KOTA	SANd		CABING SIZE 7 4 WEIGHT 2 7
PAY FROM	то		CASING DEPTH 4464 SACKS CEMENT 200
PRESENT TOTAL DEPTH 2 2	P. B. FROM	3465	LINER: FROM TO SIZE WT.
DATE WELL COMPLETED	51ZE O. H		TUBING SIZE 2 2 DEPTH PERF
PERFORATING DATA OR PAY	ZONES:		PACKER: TYPE DASCY DEPTH
SHOTS/FOOT	FROM	то	TUBING: VOLUME . ALLOWABLE PRESSURE
99	2046	3106	CASING: VOLUMEALLOWABLE PRESSURE
4	3146	1158	PRODUCTION: INITIAL PRESENT PRESENT
	3190	3298	ACID. SHOOTING & FRACTURING RECORD.
F	2218	2328	
	3344	1262	
		-,-	TREATING EQUIPMENT:
TREATING MATERIALS: TYPE	AMOUNT		PUMPING EQUIPMENT BUSINA
Nolas balls	284		MIXING OR BLENDING
			FLUSH TANKS
			OTHER DAIL INJECTOR
		-	OTHER
TIME PRESSURE	BARRELS	OF FLUID	REMARKS
A.M.OR P.M. CASING TUBING	OUT OF IN TANKS FORMATION	PER PER READING MINUTE	
<u>,</u>	•	•	
6:00 Am 9-8-57			ARRIVED AT LOCATION Well Used for
	·		SAIT WATOR DISPOSAL
			12 204 2 3096 TO 3106 + 3146-3158
			Pactor of 3070' Injected 100Pm
			at 2100 th, Drop 44 balls pressure
			received To 2100# 10/2 BPM
DECreased Pany	RAT- TO 80	10 # Lovert	is 24Pm
25 20NE 3150	:3298 Mcs	T Packe	of Ul70' Fernation Rrake + 2800 \$
TO 2200 # 148	Pm. Broke 7	To 1900 # @ 1	12 APM Decensed floop Rate To
375# 28RPA	Despord	2406Alls	increase Pressure from 18007 To 1900
10 GPM Bacre	2 d To 4	25-#10 46	?pm
			c JUG 2' Peret Packer at 3315"
Fermation Keek	To 2 206#	e 82 Ben	Decrease Pemp Rate To 1.5 apm
AT I STATE POLO	Parker 4	Shut in C	reruits 11:00Pm
8:00 Am 9-9-57	Par Par Act	<u> </u>	Reported back to Love Their
F. F. C. V.	11751 4 - 7	T . T	Reported back to Location in sections
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P2-77	The state of the s	to part of	Gant la to a del all all
020-,24/2071	of that is being	3 20 PM 12	870 # 60 minutes 394 Oble pumped
Derense Pamp	LATE TO 400	1 2 11 15	Tion Rate 4. 1 DPM @ 4/00# 30
Mingter 12	28 666 TOTA	1 Pumpes	<u> </u>
		PM 7-9-6	57 Total 22 Mours weaking on
Gec //			
			
TOTAL BRLS. PUMPED: FILL	& BREAKDOWN		TREATING FLUID FLUSH FLUSH
AVERAGE RATE: TREATING	•		FLU9H
TREATING PRESSURE: MAX			MINIMUM
I	M O M		

BERVICE ENGINEER....

Operator WIRELINE, INC. RADIOACTIVITY LOGGI PERFORATING	, ЙС	•			Contract	Nº.	587
Cherge to		رتور:			_ Invoice I	No	
Rigman Address Address		· · · · · · · · · · · · · · · · · · ·	*****		Date Custome		
City Ship to					Order N Date Shipped.		1 1 2 2 3
egal (or well no.) Address (or field) Country	ntv 🥳	. مهمیه،			Snipped. District.		p p
Description VIA VIA VIA State 4		7			Operatir Base		1,
TO WIRELINE, INC. In consideration of the furnishing of your herein set forth, the undersigned agrees as follows: to-wir: The undersigned, hereinafter referred to as the customer, agrees to pay you the amo Should the amount due be not paid within the term fixed by the Invoice, interest at six attorney for collection, the undersigned agrees to pay attorney's fees of twenty per cen. The customer certifies that he is the owner of the well on which the work is to be performance of said work and that all depth measurements shall be made under his su Because of the hazards existing in the performance of the work ordered, the custom and that you are not to be held liable for injury to persons or property arising in the The customer agrees to reimburse you for the reasonable value of any of your instruction. Customer agrees that the foregoing constitutes the entire agreement and that your expenses.	percent, it of the it done and pervision er agree perform uments,	from t invoice d that i. s that ance o tools	he date amour said w you d of said s or equip	of involution the sell is in one guidenties.	ce, will be cheminimum of proper and starantee the stor damage.	harged and I \$75.00. suitable conc results of y d in the rend	f placed wit lition for th our service
To Be Paid By	(signa	ture o	of custo	mer or	authorized	representativ	(e)
DESCRIPTION		ICE		UNT	TOTAL	· A/C	COST
run Mantin Constitution log				 		-	<u> </u>
as directed by Mr. Tanion - 111. Language						_	-
Service Charge				-		-	-
Depth Charge from Surface to グラッツ feet						_	-
Logging Charge ////// feet	1		-			_	
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Service Charge			-	1-1-		-	
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ملد

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TIME	RATE	1	1	TBG.				SER	VICE L					·	
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330			0	O	START	wa Tex	Via	casi-	19.	<u> </u>					
0337		40	400	0	Casin	g /11/1-			ジ ——		-				
0340	· · · · · ·		<u> </u>		STaxT	WaTE	R Via	Terbi-	1 5 -						
0543	技	12.	1300	2600	Tub.	ng fu	//- PR	ESSURE	Cas	ing	To 1	300x	o s j-	·	
0350	ユ	24	1100	2600	-570	g Dun	1p - 5	TART	Acie	1					
0358	ત્ર	38	900	2100	570	o pur			EMI	ca/	2 Dpu	m51-	2.76	BBLU	
0408			1500	400	PRES	WAE C	d517	9 10	1500	2PSi-	Will	us	IE	R	
0411	1/2		1500	2500	5TAR	TChe	= mica	1/- U	ke "	14 PI	rig F	lush	will	i wate	
0416	1/2	48	1700	2000	Fici	don	PE	RFS-1	RES			To	160	<u>casi</u> .	
0423	<u></u> 쥖.	55	1500	1600	In	CREASE	- V. X	a TE	To	4B;	P/1-			<u> </u>	
0424	. 4	60	1400	2000	Ac	id Di	50/0	CEÖ	<i>/</i>					·	
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		· .	ļ	ļ	I Z	SIP.	16.00	·	<u>.</u>	no	X KC	7/E	-46	2/17	
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CALL DA		<u>. </u>		•	CUSTON CONSID SERVIC	ERED 🔲 UNSÄTI	SFACTORY	TEST		LLOWABLE	1			WABLE	

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TIME LEFT	- 1	VG.LIQUID	INJ. RATE	ADJ.INJ. RATE	(SOLIDS INC.)	TOTAL F	LUID PUMPE		P	ROPS AND	LIQUIDS IN	NECTED			
143		1/4				_/2	العرق	8	TYPE	SIZE	OR PURPO	OSE AM	TNUO		
AAX. PRE	I	VG. PRESSU	IRE	FINAL PUMP	IN PRESSURE	SHUT II	N PRESSURE			//	SX	52	maga		
[Zu				1//2	90D	1225	1/1/5				<i>\$1-</i> :38	-	z de		
OWELL L	···· *	0	7	00	WELL ENGINEE	" 91-A		<u> </u>					0		
	XUO	rden	e	L_	MC	M				<u> </u>		l			
		CUSTOM	ER REP. CO	NTACTED	1000-004	R D SATIS	FACTORY T	ROD. BEFOR	E TREATM	ENT	PROD. AFT	ER TREATME	NT		
ALL DA	I E	1			CONSIDE	RED UNSAT	SFACTORY				1	iΩ	f		

SURFACE EQUIPMENT